

Memoirs on Canadian Fungi

THE FUNGI OF MANITOBA AND SASKATCHEWAN

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PREFACE

Of the services that the science of botany renders to mankind, the most readily recognized and supported are those that deal directly with economic problems. Research, essentially fundamental but less colourful, upon which the other services depend, is only too often regarded as merely academic, and hence worthy of but scant recognition. It is not, perhaps, surprising that a generation, motivated by acquisitiveness and eager for the return of prosperity, should view scientific research with impatience and misgiving, and demand in its stead the application of scientific knowledge to the solution of its industrial and agricultural problems. The demand, however, is quite unreasonable and illogical. Applied science is born of research after laborious, devoted travail.

Canada is indeed fortunate in being served by mycological workers who, in spite of this popular misconception, carry on research for her benefit, quietly, indifferent to indifference, and unperturbed by lack of appreciation. Their contentment and ambition lies in the performance of the duties they have chosen; but it is to be hoped that the time is not far distant when they and the services they render will be more widely and more adequately recognized.

The memoir before us is an excellent record of mycological research, and the pleasure I have in voicing my appreciation in this brief preface is enhanced by the intimate personal contact with the authors it has been my privilege to enjoy for many years: Dr. G. R. Bisby the senior author and active pioneer in the systematic study of the fungus flora of Manitoba; Professor A. H. Reginald Buller, who was for many years the distinguished head of the Botany Department of the University of Manitoba; Dr. Dearness, Canada's veteran mycologist, and a world-wide authority on taxonomy of fungi, whose valuable help in work of this kind has always been so readily given; and two new collaborators, Professor W. P. Fraser and Dr. R. C. Russell, who in addition to their arduous official duties, the former as professor of biology at the University of Saskatchewan and the latter as one of my own associates at the Dominion Plant Pathological Laboratory at Saskatoon, have been busily engaged in contributing a first account of the fungus flora of Saskatchewan.

It is a record of a vast amount of painstaking work in collecting the material for study and in performing the critical determinations, and is proof of the valuable results that can be obtained when a number of keen scientists bring their interests to bear upon a neglected field in the science of botany. The work must arouse a feeling of gratefulness in every one interested in botanical science; and also, perforce, one of deep regret that such work has been so neglected in Canada, in the critical study not only of fungi, but also of phanerogams in the different regions of the Dominion. It is indeed a sad reflection on the progress of botanical exploration to have to report that "the phanerogamic flora is but inadequately known" but, nevertheless, it is true. The distinguished Director of the Royal Botanic Gardens, Kew, expressed himself, after a visit to Canada, in the following terms:

"It is to be hoped that the importance of botanical knowledge has only been overlooked, owing to the rapid developments which have been taking place in so many other directions and that the time is now approaching when the assistance which the science of Botany can render to a country will be more fully appreciated and that time and opportunity will be found to consider the urgent needs of the science in order that she may fulfil her proper functions."

Let us hope that this Memoir will constitute a stimulus to increased activities in these lines of research; and to more generous financial support upon which they must be dependent. The necessity for such activities has time after time impressed itself forcibly upon me during the many years of my service as Dominion Botanist and it is, therefore, most gratifying to me, as it will be to the mycologists of the Empire and of the world, to see this list of the fungi of Manitoba and Saskatchewan issued by the Canadian Honorary Advisory Council for Scientific and Industrial Research, as a first step towards the establishment of a more adequate botanical exploration of this country. The National Research Council deserves every recognition for its foresight in providing for these and coming workers a means for the publication of their achievements. May this valuable first "Contribution to our Knowledge of Canadian Fungi" be the forerunner of many others.

It is, unfortunately, on a note of deep regret that my conclusion is reached. Two of the authors, men who for many years have been its faithful and ardent leaders, are lost to Canadian mycological research. Dr. Bisby is leaving his former haunts to accept a responsible position with the Imperial Mycological Institute at Kew and Professor A. H. Reginald Buller has severed his connection of many years with the Botany Department of the University of Manitoba. The reputation of these men has extended far beyond the borders of Manitoba, indeed well over the world, for distinguished service that mainly originated in this province, and the loss to Canada is a very real one. May many years of fruitful activities be yet before them!

H. T. GÜSSOW.

TABLE OF CONTENTS

PREFACE BY H. T. GÜSSOW, DOMINION BOTANIST

	PAGE
I. Introduction.....	7
II. The Natural Features of Manitoba.....	8
III. The Fungi of Certain Areas in Manitoba.....	9
IV. The Fungi of Saskatchewan, by R. C. Russell.....	10
V. Geographical Distribution.....	13
VI. Immigration and Ecology.....	14
VII. New Species of Fungi.....	17
VIII. Fungi Apparently Absent.....	18
IX. Rare Species.....	18
X. Estimates of the Total Number of Species of Fungi in Manitoba.....	19
XI. Statistical Summary.....	19
XII. History of Mycology in Manitoba.....	20
XIII. The Groups of Fungi, and Acknowledgments to Mycologists.....	20
XIV. Vale!.....	24
XV. List of Species.....	24
Myxothallophyta.....	24
Bacteria.....	27
Phycomycetes.....	29
Ascomycetes.....	34
Basidiomycetes.....	60
Fungi Imperfecti.....	112
The Dermatophytes, by A. M. Davidson and P. H. Gregory.....	141
XVI. Appendix.....	141
XVII. Host Index.....	142
XVIII. Bibliography.....	174
XIX. Index to Genera and Orders of Fungi.....	183

I. INTRODUCTION

The three authors mentioned first on the Title-page published in 1929 a book entitled "*The Fungi of Manitoba*" (71). A Preface was contributed by Dr. E. J. Butler, in which he expressed his conviction that such a work would be useful. A kind reception has been given to *The Fungi of Manitoba* despite its imperfections. The support of Prof. Fraser and Dr. Russell now has been enlisted in order to amplify the work to include records of the numerous collections made by these and other workers in Saskatchewan, as well as a considerably increased number of entries for Manitoba, revised determinations where necessary or possible, and expanded notes on the species of fungi found.

Every mycologist will realize that the present work by no means provides a *complete* list of the fungi in the large area under survey. Indeed, it probably would be impossible to present a complete and accurate census of all the fungi in only one square mile of good collecting ground. The species of fungi present fluctuate from year to year, and they occur in almost endless variety in the soil, in decaying leaves or wood, and in or on all the varied organic substrata or living hosts present. The contrast with the vascular plants is striking in this respect; for a phanerogamic botanist could quickly list all the higher plants present in any square mile, at least in Western Canada, and an ecologist could arrange them readily in their proper associations. Nevertheless, despite the inevitable incompleteness of this work, Manitoba ranks mycologically amongst the better-known areas of the world.

The introductory sections of the preceding edition (*i.e.*, *The Fungi of Manitoba*) have been revised, but not all the points previously mentioned have been repeated. All the fungi known to have been specifically determined from Saskatchewan and Manitoba are included, and also a few from just over the border in Ontario. The Uredinales of Alberta, in so far as they are represented in the herbaria of the writers, have been added.

The authors desire once more to express their sincere thanks to many botanists who have helped make this work more complete and accurate. The Saskatchewan assistance is acknowledged in Section IV. Professors V. W. Jackson and C. W. Lowe have identified many host plants. The members of the Dominion Rust Research Laboratory on the campus of the University of Manitoba have contributed much to mycology. To all the members of the staff of this active Research Laboratory, now including Drs. J. H. Craigie, C. H. Goulden, Margaret Newton, W. F. Hanna, F. J. Greaney, T. Johnson, W. L. Gordon, J. E. Machacek, W. A. F. Hagborg, R. Peterson, and Messrs. J. N. Welsh, B. Peturson, A. M. Brown, W. Popp, and others employed temporarily, the writers are under obligation. Also previous members, such as I. L. Connors and D. L. Bailey, have assisted with collections and study of fungi. Former students in the Botany Department including Drs. Irene Mounce, W. F. Hanna, Dorothy Newton Swales, T. C. Vanterpool, Harold Brodie, and Silver Dowding Keeping, have also contributed much. Mr. M. Timonin, while an assistant to the senior author, carried on a large amount of work with the fungi, especially those found in the soil. The publications of these workers are listed in the Bibliography.

For the past thirty-three years the fungi have been studied in Manitoba, and following the establishment of the Rust Research Laboratory in 1923, from ten to fifteen workers have constantly studied the fungi or the diseases they cause. In Saskatchewan mycological work has gone on continuously since 1918 (see Section IV).

The species of fungi reported from Manitoba are represented by specimens in the herbarium of the Department of Botany, University of Manitoba, unless something is said to the contrary in the entry in the List of Species. Many specimens have been shared with John Dearnness or other specialists, and many are also in the herbarium or in culture at the Rust Research Laboratory.

The arrangement of the fungi is largely as in *The Fungi of Manitoba*. Martin's *A Key to the Families of Fungi Exclusive of the Lichens* (Univ. Iowa Studies Nat. Hist. 17:83-115. 1936) gives a good arrangement of the fungi, but was received too late to follow here. The writers, however, have endeavored to use conservative taxonomy throughout. They have followed, more or less of necessity as well as choice, the various specialists on certain groups of North American

fungi, as is indicated in Section XIII. The genera and species are listed alphabetically under orders or families, etc., the aim being to achieve a compromise between a natural arrangement and ease of location of species.

The "standard" names of hosts are usually used. *Gray's Manual of Botany*, seventh edition, is followed, except where other names are used in *Seymour's Host Index* compiled at the Gray Herbarium. Bailey's *Manual of Cultivated Plants*, Britton and Brown's *Illustrated Flora of the Northern States and Canada*, Hitchcock's *Manual of the Grasses of the United States*, and other works have been consulted; especially Rydberg's *Flora of the Prairies and Plains of Central North America*, since this is the only manual that covers western Manitoba and southern Saskatchewan. We have endeavored to transfer many of Rydberg's names to more "standard" names. Much difficulty has arisen over host names, for in Manitoba at least, the phanerogamic flora is inadequately known, and it has frequently been necessary to struggle with the name for the host as well as that for the fungus.

The distribution within the Provinces is known for few of the fungi included. Most of them are undoubtedly widespread in the areas in which the proper hosts or substrata are present (see Section V on Distribution). Localities of collections are given when only one or a few are known; otherwise a generalized statement is made. By referring to the map or to Sections III and IV one can usually find reference to the type of habitat of a fungus recorded. The dates of collection are included only when they may be of interest or significance.

The list of Dermatophytes is revised from data by Drs. Davidson and Gregory. The Lichens are not included, since there is little to add to the list previously (71) presented.

II. THE NATURAL FEATURES OF MANITOBA

A glance at a map shows that Manitoba extends from the 49th to the 60th parallel of latitude, a distance of more than 760 miles. The writers have not been north of the 54th parallel, and there are few records of fungi from that mycologically interesting region comprising more than half of the Province. Southern Manitoba is approximately at the geographic centre of North America.

The area of Manitoba is 251,832 square miles, of which Lake Winnipeg occupies over 5,500 square miles, and other lakes 10,000 or more square miles. This vast area contains a comparatively limited phanerogamic flora, owing to its high latitude, the cold winters, and the lack of greatly varied physiographic features. There are known in Manitoba approximately 1,150 species of Angiosperms growing without cultivation, 12 of Gymnosperms, and 42 of Pteridophytes. The limited flora of vascular plants inevitably limits the flora of fungi. Nevertheless, since the remains of higher plants are decomposed, there are many saprophytic fungi; and many parasites follow their hosts nearly or quite to their northern limits. Manitoba includes not only a part of the northern limit of many plants of central North America, but also part of the western limit of many eastern species, and of the eastern limit of certain western species. Manitoba and Saskatchewan are areas of considerable mycological interest.

The Host Index near the end includes most of the trees, shrubs, and important cultivated plants of Manitoba, but perhaps only a third of the native herbs, since these for the most part have not been examined intensively for fungi.

The rocks exposed at the surface over much of Manitoba are the original Pre-Cambrian rocks. But the vegetation is very recent: all plants now present must have arrived since the last Pleistocene glacial ice melted and disappeared some 25,000 years ago. The great majority of the fungi of Manitoba have been collected on ground formerly covered by glacial Lake Agassiz.

Manitoba ranges in elevation from sea level at Hudson's Bay to about 2,600 feet in the hills along the western boundary. Our collections were mostly made at 700 feet above sea level around Lake Winnipeg to 750 feet at Winnipeg and vicinity, but many were obtained at 1,100 to 1,200 feet at the Lake of the Woods and Brandon, and as high as 2,200 feet at Clear Lake.

The precipitation in Manitoba is frequently too small to provide optimum conditions for fungi: it ranges from an annual average of 16 inches in the southwest to 22 inches around Winnipeg and in eastern Manitoba. The humidity of the atmosphere is generally low. The temperatures

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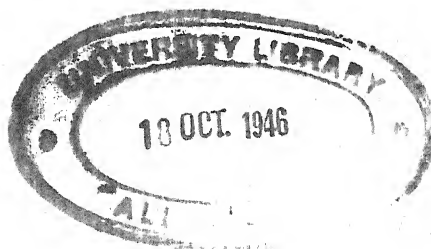
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show the usual mid-continental variation from 90° or even 100° F. in summer to 30° or 40° or more below zero in winter. The annual average at Winnipeg is 38.8° F. Since, during more than a third of the year, the fungi suspend their activities because of cold, they must catch up with the accumulated work during the remainder of the year; and a period of damp weather may fill the woods and fields with fungi in fruit. Fruiting is especially necessary where continuous vegetative propagation is impossible. In other words, western Canada provides better than average conditions for obtaining fungi in the sporulating, identifiable condition.

III. THE FUNGI OF CERTAIN AREAS IN MANITOBA

Most mycologists who consult this work will not be interested in the exact spot in Manitoba or Saskatchewan in which a particular fungus has been collected. However, place or places of collection, or some statement regarding range, is given for each species cited, excepting certain species from soil. These localities give indications of likely places to find the species again, and clues to the type of soil, vegetation, etc., with which various fungi are associated. The areas in Manitoba surveyed more intensively for fungi are characterized briefly here. Further details are given in the preceding edition.

1. **The University of Manitoba** now has its headquarters on the site formerly called the Manitoba Agricultural College, and therefore the abbreviation "Univ." is now used instead of "M. A. C." This site is on the banks of the Red River about four miles south of the limits of the city of Winnipeg. Excellent collecting ground is available there at the door of the herbarium. This area of approximately one square mile consists of cultivated fields, and of one of the least disturbed stretches of woodland along the whole length of the Red River. The soil is clay, originally the bed of Lake Agassiz, with recent additions from the overflowing river. The trees are all deciduous, and *Populus tremuloides* and *P. balsamifera* predominate, but there are also many *Fraxinus pennsylvanica*, *Acer Negundo*, *Quercus macrocarpa*, *Ulmus americana* and *Salix* spp., and a few *Tilia americana*. The numerous shrubs and herbs present on this area make a total of about 355 species of vascular plants which persist without cultivation; also most of the plants cultivated out-of-doors in Manitoba are grown there. In this area listed as "Univ." about 1,600 species of fungi have been collected (see Section XI).

Emerson, St. Norbert, Winnipeg and Selkirk are also on the Red River. Carman and places on the Assiniboine River, such as Portage la Prairie, have or had similar vegetation. Brandon is on the Assiniboine River, but there the dry prairie of southwestern Manitoba is also found.

2. **Lake Winnipeg** is surrounded at the southern end by marshes or deciduous woods. At Victoria Beach the Gymnosperms are common, and the soil varies from pure sand to clay, with an occasional outcrop of Pre-Cambrian rock. *Pinus Banksiana*, *Abies balsamea*, *Picea canadensis*, *P. mariana*, *Larix laricina* and *Betula alba* var. *papyrifera* are added to the list of trees given above as present at the University, but *Tilia americana* is absent. The shrubs and herbs are likewise more varied, and *Juniperus*, *Alnus*, *Acer spicatum* and several *Ericaceae* are present. About 500 species of fungi have been collected during short visits to Victoria Beach. The Hymenomycetes flourish there in a damp autumn.

Berens River, half-way up Lake Winnipeg on the east side, has much the same flora as Victoria Beach, but more exposure of rock, and therefore more "muskegs" or bogs, which occur in depressions of the floor of rock. At the mouth of Berens River there is a Post of the Hudson's Bay Company, a summer Inn, and a colony of perhaps 200 persons, mostly Indians. From both sides of the river the primeval forest extends indefinitely, to provide a paradise for mycologists.

Norway House (63), about 300 miles north of Winnipeg on the 54th parallel, is on the Nelson River a few miles northeast of the north end of Lake Winnipeg. The topography, habitations and population are similar to those at Berens River; the vegetation is slightly less vigorous. *Quercus macrocarpa*, rarely seen at Berens River, is absent at Norway House, as is *Ulmus americana*. Norway House has been visited on three occasions, each one week long, and about 200 species of fungi have been collected, several of which are of especial interest. It is the most northerly area in Manitoba in which intensive collecting has been done.

Matlock, Winnipeg Beach, and Gimli, on the west side of the southern part of Lake Winnipeg, have provided a few records of fungi, but the flora at these points is not much different from that along the Red River.

3. **Eastern Manitoba**, in this work referring to the mixed coniferous and deciduous woods beginning about thirty-five miles east of Winnipeg, has topography like that from Victoria Beach northward. The vegetation also is similar to that of Victoria Beach and Berens River, but the trees are slightly larger, and there are to be found in addition *Thuja occidentalis*, *Pinus resinosa*, *Populus grandidentata* and, in the extreme southeastern part of Manitoba and adjacent Ontario, *Pinus strobus*. The Winnipeg River runs through eastern Manitoba, and Lac du Bonnet is an expansion of that river. The points visited have been Lac du Bonnet, Point du Bois, and, especially areas near the main highway passing through Beausejour to Whitemouth, Rennie, West Hawk Lake, and on to Keewatin and Kenora, on the Lake of the Woods. Vivian is south of Beausejour, Ingolf is just over the border in Ontario, and Minaki is on the railway north of Kenora. Indian Bay is on Shoal Lake, connected with the Lake of the Woods but in Manitoba. Keewatin, Kenora, and Minaki are a few miles within Ontario, but the fungi found at these points are included as Manitoban, since there can be little or no doubt that any fungus present would have a range extending into the identical terrain of eastern Manitoba. It is much less misleading to record a fungus from these points as from Manitoba than to record it as from Ontario, for one naturally thinks that "Ontario" refers to an area more than a thousand miles southeast of Kenora. Before the recent construction of the highway eastward into Ontario, the flora of eastern Manitoba could be studied conveniently only by travelling on to the pleasant stations at Minaki or Kenora.

4. **Clear Lake**, in the Riding Mountains National Park, is in western Manitoba, north of Brandon. This beautiful spot, on a plateau about 2,200 feet above sea level, has extensive mixed woods and damp spring-fed glens. It has only recently become easily available to travellers, and only two short mycological excursions have been possible. It is sure to become better known in the future.

5. **Southwestern Manitoba**, the area south and west of Carberry and Brandon, consists of expanses of prairie or "Park-land" with clumps of trees, and is frequently dry; but in a wet season many interesting fungi are to be found. The similar prairies of southern Saskatchewan have received rather more attention from mycologists.

A few fungi have been collected in western Manitoba north of the prairies and of the Riding Mountains, e.g., at Dauphin and Swan River. These areas are not greatly different from those around Winnipeg.

6. **Churchill**, at the terminus of the Hudson's Bay Railway, is Manitoba's seaport near the 59th parallel. Short visits have been made to Churchill by Drs. Margaret Newton and P. H. Gregory, and these mycologists have also made collections along the railway. Mr. Wm. Güssow has collected several fungi near Churchill, and Prof. V. W. Jackson a few from The Pas northward. The northern part of Manitoba is, however, relatively unknown mycologically.

IV. THE FUNGI OF SASKATCHEWAN

BY R. C. RUSSELL

Following the generous invitation of Dr. G. R. Bisby to publish a list of fungi which have been collected in Saskatchewan with the revised edition of *The Fungi of Manitoba*, as complete a list of these collections as is possible has been compiled, and is now combined with the Manitoba list. It will become evident, upon careful scrutiny, that the Saskatchewan collections have been built up by men with a distinct leaning toward plant pathology, for the parasitic fungi are much more adequately represented in the list than are the saprophytic fungi. There follows a brief account of the mycological work which has been conducted in this Province, and of some of the features of the topography, soil, and flora.

A few incidental collections of fungi were made by Prof. T. N. Willing of the University of Saskatchewan between the years 1910 and 1920. He was also a pioneer in the writing of plant pathological literature in Saskatchewan (57). The systematic collection of fungi in this province began with the establishment, in 1917, of the Dominion Laboratory of Plant Pathology in western Canada, with the chief station at Brandon, Manitoba, and a sub-station at Indian Head, Saskatchewan. In 1918, co-operation with the University of Saskatchewan at Saskatoon was arranged and the chief station was removed to Saskatoon in the spring of 1919. Mycological herbaria

were developed in the Dominion Laboratory and also in the Biology Department of the University. Collections of fungi were usually shared. With very few exceptions, specimens of the fungi listed for Saskatchewan are to be found in one or both of the above-mentioned herbaria. Permanent or temporary members of the staff of the Dominion Laboratory of Plant Pathology who have served here for greater or lesser periods of time between 1917 and 1936 and who have contributed toward the mycological herbaria here are Prof. W. P. Fraser (20-30), P. R. Cowan, Dr. D. L. Bailey, Dr. Margaret Newton (230), Dr. J. H. Craigie, I. L. Connors (25), Dr. P. M. Simmonds, present Officer-in-Charge (41-49), J. W. Scannell, H. S. McLeod, R. R. Hurst, R. C. Russell (34-38), G. A. Scott (28, 49), C. E. Maguire, D. F. Adams, Dr. G. B. Sanford (40), B. J. Sallans (39, 45), H. W. Mead (32, 33, 44), W. G. Sallans, W. T. Maguire, C. H. Bryce, J. A. Hempson and R. J. Ledingham. Among those working or studying in the Biology Department of the University of Saskatchewan who have made valuable contributions toward building up the herbaria and studying the plant pathological problems of the country, the following should be mentioned: Dr. W. P. Fraser (20-30), Dr. G. A. Ledingham (26, 27, 55), Dr. J. E. Machacek, Dr. J. H. L. Truscott (56) and E. T. Howe. T. C. Vanterpool (50-56), Assistant Professor of Biology in the University of Saskatchewan, in his study of certain plant pathological problems has brought to light several interesting soil fungi and investigated their life histories. Drs. J. H. Craigie, Margaret Newton and J. E. Machacek are now at the Rust Research Laboratory at Winnipeg and D. L. Bailey and I. L. Connors were formerly at Winnipeg also.

During the past few years many of the collections of the Dominion Laboratory of Plant Pathology have been divided into two or more parts, and all but one portion have been sent away to other herbaria. Thus, duplicates of a considerable number of our recent collections have been deposited in the herbaria of the Division of Botany at Ottawa, of the University of Toronto and of G. R. Bisby, and many of these have been critically examined by other mycologists. We are particularly indebted in this respect to I. L. Connors, Dr. Irene Mounce, and Dr. G. R. Bisby. A few specimens of miscellaneous fungi have been studied for us by Dr. John Dearnness of London, Ont., and a few rusts have been examined by Dr. J. C. Arthur or Geo. B. Cummins of Purdue University. The help which these experienced mycologists have given is greatly appreciated.

A description of the region in which the Saskatchewan collections have been gathered is included below for the benefit of those readers who are unfamiliar with this territory. This province lies immediately to the west of Manitoba. It extends north and south for a distance of about 760 miles and its greatest width is nearly 390 miles. Its natural features resemble those of Manitoba in many respects. The major part of the southern half of Saskatchewan is made up of arable plains and park lands, while the northern half is covered partly by the Laurentian Shield, with its out-cropping of Pre-Cambrian rocks, and partly by an area of relatively infertile sandy soil, bearing coniferous and mixed coniferous and deciduous forests, intervening between the rocky area and the arable land farther south.

The southern portion of the province has been divided into four zones (see map) by the Soils Department of the University of Saskatchewan. Those zones are based on soil type. Zone 1 is called the Brown Soils or Short Grass Prairie Region; Zone 2, the Dark Brown Soils or Intermediate Prairie Region; Zone 3, the Black Soils or Tall Grass "Park" Region; and Zone 4, the Gray Soils or Wooded Region. Over these zones as a whole, the surface of the land slopes downward in a northeasterly direction from Zone 1 to Zone 4. There is a corresponding drop in the evaporation rate, as one proceeds northeastward. There is a distinct change in the phanerogamic flora corresponding with these changes in ecological conditions, and necessarily a change in the cryptogamic flora, although the latter is not so well known as yet. These zones, as outlined by the soil scientists, are shown on the map. It should be understood that the boundaries between the zones are not as distinct as indicated on the map as there is usually a gradual transition from one zone to the next.

At the extreme northwestern corner of the province lies Athabaska Lake, at an altitude of about 700 feet. The altitude of the land in that corner of the province varies from about 700 feet on the shores of this lake to about 1,600 feet at the height of land between it and the basin of the Churchill River to the south. Much of this district is heavily wooded with coniferous forests. A few specimens of woody shelf-fungi have been collected in this area by a member of a survey party but no systematic collections of fungi have been made there.

The transition zone between the rocky Laurentian Shield and the arable lands to the south is shown on the map as Zone 4. The altitude of this wooded region varies from about 900 feet

near the eastern border of the province to about 2,300 feet near the western border. This region is covered by a network of streams and lakes. The trees most abundant in this zone are *Pinus Banksiana*, *Populus tremuloides*, and *Picea canadensis*; but *Picea mariana*, *Abies balsamea*, *Larix laricina*, *Populus balsamifera*, *Betula* spp., *Alnus* spp., and *Salix* spp. are also present. Collections have been made in this zone at Waskesiu Lake and other points within the Prince Albert National Park but most parts of this area and the rocky area to the north of it have never been visited by mycologists.

Zone 3, the Tall Grass Park Region, is composed largely of open meadows dotted more or less thickly with groves but it also contains a few open plains and some forested areas. The topography varies from level tracts to areas which are sharply rolling, where groups of hills, such as the Touchwood Hills, rise several hundred feet above the general level of the zone. The altitude of this zone varies from about 1,500 feet to 2,300 feet. Much of this zone is poorly drained and the water from the accumulated snows of winter collects in ponds in the springtime. These ponds are known locally as sloughs and they vary greatly in size according to the season of the year and the variations in precipitation from year to year. Within this zone there are also a few lakes of considerable size, such as the Quill Lakes. Apart from the two branches of the Saskatchewan River there are several rivers such as the Battle River in the west and the Qu'Appelle River in the east which develop a considerable flow of water in the spring and in rainy seasons. The predominating tree in the groves of this region is the trembling poplar, *Populus tremuloides*. Many shrubby species of willow are present, as well as a few other species of poplar and several species of birch. In the southeastern part of this zone *Fraxinus campestris*, *F. laucolata*, *Acer Negundo* and *Quercus macrocarpa* are to be found in the river valleys, while in the north *Pinus Banksiana*, *Picea mariana*, *P. canadensis* and *Larix laricina* are present in a few localities, notably around Prince Albert. Humboldt and Prince Albert lie within this zone and Indian Head is near: considerable collecting has been done in the districts surrounding these places.

Zone 2, the Intermediate Prairie Region, has a much larger proportion of its surface covered by open treeless plains and hills than has Zone 3. Some of the finest wheat-growing districts of western Canada are situated on the level plains of this region. The altitude of this zone varies from about 1,600 feet to 2,200 feet. This region possesses a few large lakes, such as Last Mountain Lake, but both lakes and streams are fewer in number than in Zone 3. Moreover many of the lakes are very saline and the streams are small in proportion to their length. Owing mainly to a higher evaporation rate, but also to somewhat lower average precipitation, moisture conditions in this zone are not so favorable to the growth of trees, and many semi-xerophytic plants are to be found in its flora. About the only trees growing in this zone, except along some of the larger streams, are *Populus tremuloides*, *P. balsamifera* and *Salix* spp. Saskatoon lies in this zone and more collecting has been done there than at any other point in Saskatchewan.

Zone 1, known as the Short Grass Prairie Region, lies diagonally across the southwestern corner of the province. It varies in altitude from about 2,000 to about 4,300 feet. Its topography is characterized by greater differences in altitude than that of the three zones previously described. Several of the larger lakes of this zone, such as Lake Johnstone, have no outlet. Their levels rise during a succession of relatively wet years and fall during years of drought. Zone 1 is almost entirely treeless except for limited areas in the Wood Mountains and Cypress Hills and along streams. *Populus tremuloides*, *P. balsamifera*, *Picea canadensis* and *Pinus contorta* var. *Murrayana*, the lodge-pole pine, are found in the Cypress Hills, and *Populus* spp., *Acer Negundo* and *Salix* spp. grow in favored locations along the streams at lower altitudes. The semi-arid nature of this zone is due not so much to lower precipitation as to a higher evaporation rate. The warm winds, known as "Chinooks," in winter and hot searing winds in summer are very prevalent in this area. Hence the flora contains more plants of a semi-xerophytic type than that of any other zone in the province. The Cypress Hills, which are situated near the southwest corner of the province and which extend across the boundary into Alberta, comprise a very interesting collecting ground for botanists, as the flora of this region includes many species found in more mountainous regions to the south and west. This is the only place in Saskatchewan from which the lodge-pole pine has been reported. The plateau at the top of these hills rises to a height of about 4,300 feet. According to geologists, the higher levels of the Cypress Hills have not been so thoroughly glaciated as the remainder of the province. A few collections of fungi have been gathered in this district and it seems probable that many interesting fungi

will be found there in the future. Sporadic collections have been made in other parts of Zone 1 but much fewer collections have been made here than in Zones 2 and 3.

In the matter of precipitation and rate of evaporation the climate of Saskatchewan is even less favorable to the development of fungi than that of Manitoba. For a period of 31 years the average annual precipitation has been 14.34 inches at Saskatoon, and for a period of 38 years it has been 18.32 inches at Indian Head. A few places in Saskatchewan have received slightly lower or higher precipitation than these but Saskatoon and Indian Head represent nearly the two extremes as far as available records go. In Zones 2 and 3 there is a tendency for the precipitation to be higher in the southeastern portion, and lower in the northwestern portion of each zone. As pointed out above, the relative rates of evaporation have a great influence on the vegetation resulting from any given amount of precipitation and the rate is much higher in southwestern than northeastern Saskatchewan. The amount of precipitation at any given place varies greatly from year to year. For example, the total precipitation has varied at Saskatoon from 10.38 inches in 1907 to 21.28 in 1927, and at Indian Head from 9.02 in 1931 to 26.92 in 1901. Extreme and rapid variations in temperature are of common occurrence in this province. In certain years there is a maximum variation from -50°F. in the winter to 100°F. in the summer. However, a great number of species of fungi are able to survive the rigors of the climate and flourish in Saskatchewan during the periods when environmental conditions are favorable to their growth.

V. GEOGRAPHICAL DISTRIBUTION

A careful mycological survey of a region provides data on the geographical distribution of the fungi. Manitoba and Saskatchewan are favorably located for such surveys. The list of Manitoban fungi has already been used as a basis for study of the problems of distribution of fungi. It was pointed out in the previous edition (71) that about 60% of the fungi then known in Manitoba were known also in Europe, whereas less than 22% of the native phanerogams occurred also in Europe. After further study, this comparison of the distribution of fungi and phanerogams was expanded into a paper (68) in which the distribution of various groups of fungi was considered, and the available data summarized as follows: the total number of species of fungi on earth is of the same order as the total number of species of phanerogams, but in any particular state or country the species of fungi will outnumber the species of phanerogams because of the wider average distribution of the fungi; the smaller the area surveyed, the greater the preponderance of species of fungi; the fungi are predominantly associated with the phanerogams and their remains; saprophytes usually have a wider distribution than parasites, but even obligate parasites commonly have a host range which gives them a wider distribution than that of their individual hosts; the distribution of hosts and substrata has more influence than climatic factors on the distribution of fungi.

A discussion of the distribution of the fungi is given also in *The Fungi of India* by Butler and Bisby (2). Mycological comparisons of India with Manitoba, and of India with Europe, indicate clearly the wide distribution of fungi: about 13% of the fungi found in Manitoba have been found in India, whereas the percentage of phanerogams common to the two areas must be much smaller.

The influence of climate on the distribution of fungi requires further analysis. It is evident that climate does limit the spread of various fungi, and affects the nature of the fungus flora. If one compares the list of fungi in *Mycological Explorations of Venezuela*, by Chardon and Toro, with the present list, he will find only a small percentage of fungi common to both lists; and several of these are on cultivated plants, or were obtained at a high altitude in Venezuela. There is without doubt a larger proportion of fungi than of phanerogams common to Venezuela and Manitoba; but Venezuela has a flora of fungi very different from that of Manitoba. This is probably due in part to the difference in climate, and in part to the difference in hosts.

South Australia has a flora of phanerogams with species nearly always different from those of Manitoba; but there is considerable similarity in the genera and families. Dr. Cleland has recently published *Toadstools and Mushrooms and Other Larger Fungi of South Australia*. Many of the fungi are species found in Manitoba. The following table was made from Part II of Cleland's work and the records here presented for Manitoba.

FUNGI OF MANITOBA AND SASKATCHEWAN

TABLE 1.
COMPARISON OF FUNGI COMMON TO SOUTH AUSTRALIA AND MANITOBA

Group	Total in S. Aust.	No. common to Man. & S. Aust.	Total in Man.	Man. species in S. Aust., %	S. Australian species in Man., %
Auric.-Trem.-Dacr.....	18	5	24	27.8	20.8
Thelephoraceae.....	22	6	132	27.3	4.5
Clavariaceae.....	16	2	25	12.5	8.0
Hydnaceae.....	10	4	51	40.0	7.8
Polyporaceae.....	95	16	105	16.8	15.2
Gasteromycetes.....	109	17	40	15.6	42.5

South Australia has a more varied flora of Gasteromycetes than has Manitoba; perhaps Manitoba has more varied Thelephoraceae. But the widely separated areas have similar floras of fungi, and many species in common. About 16% of the Polyporaceae are common to both areas, but only two species are recorded as common to this list for Manitoba and to that of Overholts in *Mycological Explorations of Venezuela*.

It is hoped that mycologists who are studying certain groups of fungi may find the records in this publication useful in determining the geographic distribution of species. It will be understood that a species is not necessarily absent from Manitoba or Saskatchewan because it is not listed here; and in a few cases may not be present even though listed, since some errors of determination are inevitable. In Diaporthe, for example, two species formerly known only in Europe are included. Dr. Wehmeyer comments in his letters on the value of such Canadian records in adding to the knowledge of the distribution of the fungi.

Saprophytic fungi must develop upon dead vascular plants and their remains, however far these substrata may extend; but parasitic fungi may sometimes be left behind as a host thins out near the end of its range. Thus, for example, *Tilia americana* is near the end of its range at Winnipeg: its foliage is almost free from parasites, but numerous saprophytic fungi have been collected on dead parts (see Host Index). Some of these saprophytes, however, may not be especially adapted to *Tilia*. Species of *Populus*, on the other hand, are predominant around Winnipeg, and fungi capable of attacking the remains of poplars must find much scope for their activities, as well as much competition. The Host Index provides good evidence for the wide distribution of fungi.

The host associations, in western Canada as elsewhere, determine the type of fungus flora to be found. The fungi in the deciduous woods around Winnipeg are different from those found in the coniferous forest forty miles eastward; but the fungi 300 miles north in coniferous woods are very similar to those found in such woods in southeastern Manitoba. There is a vast difference between the fungi found on a prairie and those found in an adjacent area of woodland.

VI. IMMIGRATION AND ECOLOGY

1. **Immigration.** All plants, as remarked above, must have migrated into Manitoba during the period of approximately 25,000 years since the Glacial Period came to a close. Fungi and higher plants are still arriving. Within the last century man has introduced many crop plants into the Prairie Provinces, and has brought in weeds and parasitic fungi unintentionally, or the latter may have arrived by their own methods of distribution. In the *Fungi of Manitoba* (see also 72) several species of fungi were recorded as having arrived apparently within the preceding decade. These species included *Urocystis Cepulae*, *Puccinia Antirrhini*, *P. Sorghi*, and *Uromyces Trifolii*. All these fungi have remained, to take toll of their hosts. Since 1929 *Septoria Caraganae* has been found, first in Saskatchewan then in Manitoba, and appears to be established. *Bacillus amylovorus* was first reported from Saskatoon in 1932, and was injurious in 1933 and 1934. *Puccinia Malvacearum* finally became established on the grounds of the University of Manitoba in 1932, and has been injurious since.

Seed plants dispersed "naturally" move rather slowly, and usually remain to hold the new territory they have won. But spores of fungi can travel relatively rapidly and far by air, although they may not be able to tide themselves over a long winter. The outstanding example is *Puccinia*

graminis, which arrives each year, causes much injury, and then dies out, owing to the fact that the barberry is absent and the urediospores die during the winter or spring. Certain other cereal rusts perhaps follow the same procedure. Thus *Puccinia anomala* was first found in small amount in 1922, then not again until 1927 when it was abundant on barley; it was common in 1930, less common since. *Plasmopara viticola* developed in quantity on the few cultivated grape plants in 1927, but it did not live through the winter, and has not been seen since. Evidently the spores were carried in by the air in 1927. *Phytophthora infestans* also appeared in 1927, remained (presumably on stored potato tubers) over the winter and was prevalent in eastern Manitoba in 1928. Then dry summers must have prevented further development, for it has not been seen since 1928. *Uromyces striatus* var. *Medicaginis* was found in small quantity in 1931, but did not become established, for it has not been found during the past five summers.

The fungi just mentioned all attacked cultivated plants, upon which it is easier to determine temporary or permanent immigration of fungi. It seems likely that parasites of native plants and certain saprophytic fungi are still arriving in western Canada, and that some of these also may not be able to persist. The List of Species records many fungi found but once, or only in certain years: a few of these species may represent transient arrivals which have disappeared. However, many fungi which are rarely found, such as *Underwoodia columnaris*, *Polyporus ovinus* and *Boletus sphaerosporus*, doubtless remain with or without fruiting from year to year.

2. The effect of winter on fungi. Winter in Saskatchewan and Manitoba is a period of four or five months in which little or no fungal activity can take place in the open air. The temperature remains below freezing except for occasional days at the beginning and end of winter. A fungus, to persist, must be able to withstand this long period of freezing and desiccation. However, the wooded areas, and usually the prairies also, are covered during the winter with a blanket of snow that probably makes overwintering easier than in regions farther south where so much freezing and thawing occur during winter. When the snow goes in eastern Manitoba, spring has arrived, and a fungus can safely begin its activities, moistened by the melted snow.

The abundant fungi year after year demonstrate that winter is tolerated by most of them. It has been mentioned under "Immigration" above, however, that certain parasites cannot live through the winter. But other fungi such as *Fomes* and *Dibotryon* live as perennials; many *Sphaeriales* live as winter annuals, and even fleshy fungi such as *Polyporus betulinus* and *Collybia velutipes* may be winter annuals. The early onset of winter may transfer the fruiting of various *Agaricaceae* to spring. Many *Discomycetes* normally fruit in early spring, sometimes before the snow is all melted. Dr. Buller has demonstrated that *Schizophyllum* can withstand the temperature of liquid air for three weeks, and that *Daedalea unicolor* can remain viable for eight years in the dry atmosphere of a laboratory.

3. Coprophilous fungi. In *The Fungi of Manitoba* a section of four pages was devoted to coprophilous fungi. Further study has added a few species. In this edition the names of all coprophilous *Sphaeriales* are taken from Cain's careful study in Ontario (3), and he has identified many from dung sent him. Coprophilous fungi are widely distributed (see *Sordaria citrina* for an extreme case), and beautifully adapted for perpetuation on their substratum. Several of these fungi are discussed in Buller's *Researches on Fungi*.

The coprophilous fungi found are all recorded in the List of Species. The *Sordariaceae* and species of *Coprinus* are predominantly dung-inhabiting, but there are also many *Myxothallophyta*, *Mucorales*, *Pezizales*, *Agaricaceae*, *Fungi Imperfecti*, etc., which are wholly or facultatively fimicolous. These fungi appear in some regularity in succession upon their substratum, as is recorded in *The Fungi of Manitoba*.

4. Fungi developing upon other fungi. It is well known that certain species of fungi may develop as parasites of other fungi. The *Hypocreales* include a number of those species parasitic on the fleshy or woody *Hymenomycetes*, and these hosts are listed in the Host Index. Molds, such as *Sepedonium chrysospermum* and *Sporodinia grandis*, usually develop on *Hymenomycetes* only after the latter have discharged most of their spores; but *Verticillium* may grow over the gills of young *Agaricaceae*. Various saprophytic fungi develop on the dead tissues of other fungi.

Mushroom cultivation is rather extensive in and around Winnipeg, but *Psalliota campestris* has not been found to be seriously attacked by parasitic fungi. *Mycogone perniciosa* has not been found. *Monilia fimicola*, *Mycogone cervina* and *Pseudobalsamea microspora* occasionally develop in mushroom beds and may cause injury.

Darlusia filum, *Tuberculina persicina*, and unidentified molds and bacteria may be found on older pustules of rusts. None of the rusts of cultivated plants has been found to be checked appreciably by parasitic fungi.

Trichoderma lignorum was found (76) to develop as an active parasite upon mycelium of *Fusarium culmorum* and other soil fungi. It is considered to play an important part in preventing the dominance of root-rotting fungi in the soil.

Myxomycetes devour bacteria and spores or mycelia of certain fungi, and they play a part in the complex "balance of nature."

Lichens are sometimes parasitized by fungi, but the species have not yet been studied. Lichens are common as epiphytes on old woody fungi.

5. Fungi attacking insects. The periodical outbreaks of grasshoppers are controlled at least partially by *Empusa Grylli* (q.v.), although unidentified bacterial parasites may play the larger role. *Empusa Muscae* attacks house-flies, but not seriously until they are about to die from frost. *Empusa Aphidis* may help control aphids in certain years. Cutworms are sometimes killed by other species of *Empusa*. *Beauveria Bassiana* and *B. densa* have been found on dead insects and spiders, but the possible importance of these fungi in controlling insects in western Canada has not been investigated. Laboulbeniales and Cordyceps appear to be rare in the areas surveyed.

Insects are of interest to the mycologist also because they may carry the pycniospores which diploidize rusts, as Craigie (150-155) has shown. They are known to spread spores of many fungi. They also feed upon and destroy many species of fungi.

6. The fungi of the soil. During the past few years a special study has been made of the soil fungi in Manitoba by the senior author assisted by M. Timonin and Professor N. James. Three papers (76, 78, 138) have been published, which may be consulted for details. Vanterpool (50-56) has studied *Pythium* and *Olpidiaster* (*Asterocystis*) in the soil. The fungi identified from soil are all included in the List of Species.

There is a definite flora of fungi in the soil, consisting of species of *Penicillium*, *Aspergillus*, *Trichoderma*, *Cylindrocarpon*, *Fusarium*, *Cephalosporium*, *Alternaria*, and other Fungi Imperfecti, and of certain Mucorales, especially species of *Mortierella*, *Mucor*, *Absidia* and *Rhizopus*. The species of *Pythium* present are not obtained on the ordinary dilution plates.

Surface soils (the A₀ or A₁ horizons) of woodland, prairie, or cultivated fields contain from about 20,000 to 350,000 "diaspores" (living spores or bits of mycelium) per gram. The forest soils contain the larger numbers, and peat may have as many. Deeper in the soil, the average content of fungi usually decreases; the C horizon contains only about 40 to 1,800 diaspores per gram. Fungi capable of growing anaerobically are common in soil, especially in the B and C horizons. Some soil fungi, especially *Aspergillus* spp., flourish at high temperatures (37° C.); other fungi, such as certain species of *Cylindrocarpon* and *Penicillium*, can develop well at temperatures as low as 6° C.

Certain fungi parasitic on seed plants were obtained from soil. *Helminthosporium sativum* was isolated from virgin prairie soil, as well as from that of wheat fields. The species of *Fusarium* in virgin soil include *F. oxysporum*, *F. coeruleum* and *F. Solani* var. *Martii*; *F. culmorum* also was isolated from the soil of wheat fields. *Rhizoctonia Solani* was isolated from virgin soil.

Some fungi in the soil are able to grow parasitically on the mycelium of other fungi. *Trichoderma lignorum* was found to be particularly efficient in this parasitism, and is considered to assist in the "biological control" of pathogenic fungi in the soil.

Many soil fungi are included in the List of Species without designation as to the locality from which they were isolated. The majority were obtained at or near the grounds of the University of Manitoba. All species recorded are probably widely distributed.

7. The fungi in butter. Molds sometimes develop in butter held for some time in storage or transportation. An investigation by Bisby, Jamieson, and Timonin (77) showed that a considerable flora of fungi (about 75 species) was present in the samples of butter. The better creameries were able to produce butter almost or quite free from spores. The fungi in butter are, of course, principally common molds from the soil or plant parts, and are seldom important unless the butter is held in storage.

8. The fungi on cereals. The importance of cereals to the agriculture of the Prairie Provinces has led plant pathologists to make a thorough study of the fungi associated with them. The List of Species includes brief summaries of these various species of fungi. The rusts, smuts,

and other fungi parasitic on the aboveground parts of cereals cause much damage. The fungi parasitic on the roots of cereals also cause injury, and in making large numbers of isolations from roots various "soil fungi" not actively parasitic are certain to be isolated. The List of Species includes reference to several fungi found in the roots of wheat, oats, barley, or other grasses. Thanks are due Drs. W. L. Gordon and J. E. Machacek at Winnipeg, and P. M. Simmonds and Mr. R. J. Ledingham at Saskatoon, for providing lists of these fungi associated with cereal roots. A glance at the list of fungi found upon *Triticum aestivum* (see Host Index) will help explain why the yields of wheat are sometimes low.

9. **The rate of decay of fallen logs.** Fallen trees decay with moderate rapidity in Manitoba, despite the fact that for four or five months each year decay is halted by frost. A log of *Populus*, living when cut down in the winter of 1923-24, about 1½ feet in diameter and 6 feet long, was left in the woods. It is still moderately firm after thirteen years, despite the activities of *Fomes applanatus* and various other fungi. Decay probably proceeds with "normal" rapidity except in winter. It is stated (Leavitt, C., *Forest Protection in Canada*, 1912) that "in the spruce region of the Adirondacks, tops properly lopped and on the ground will practically disappear by decay in from 6 to 12 years." Few data are available from western Canada.

VII. NEW SPECIES OF FUNGI

It is inevitable that intensive search in regions far removed from mycologically well known areas must result in the finding of undescribed species. *The Fungi of Manitoba* included descriptions of the following new species, the authors being Dearness and Bisby unless otherwise stated:

<i>Licea fimicola</i>	<i>Coprinus longipes</i> Buller
<i>Pyronema canina</i>	<i>C. parvisporus</i> Buller
<i>Stictis curtispora</i>	<i>C. stellatus</i> Buller
<i>Dichaena Populi</i>	<i>Cercoseptoria Lappulae</i>
<i>Graphyllum manitobiense</i>	<i>Cercosporella Gei</i>
<i>Halbaniella Linnaeae</i> Dearn.	<i>C. Nestiae</i>
<i>Curreyella Bisbyi</i> Dearn.	<i>Ramularia coccinea</i>
<i>Ceriospora manitobiensis</i>	<i>R. sepium</i>
<i>Didymella manitobiensis</i>	<i>Scopularia Populi</i>
<i>Leptosphaeria rugosa</i>	<i>Trichosporium parasiticum</i>
<i>Metasphaeria querna</i>	<i>Colletotrichum Humuli</i> Dearn.
<i>Pyrenophora rugosa</i>	<i>Gloeosporium spadiceum</i>
<i>Diaporthe Viburni</i>	<i>Marssonina Aquilegiae</i> Dearn.
<i>Diatrype Celastris</i>	<i>Heteropatella Viburni</i>
<i>Sporobolomyces albus</i> Hanna	<i>Phyllosticta Corni-canadensis</i>
<i>Hypochnus flavo-brunneus</i>	<i>Rhabdospora Viburni-Opuli</i>
<i>Hypoloma longipes</i> (— <i>H. elongatipes</i>)	<i>Septoria Giliae</i>

All these species are listed in this edition, with further data whenever possible, and with changes of genus in two or three cases. Two new varieties were described, *Gnomoniella Coryli* var. *circinata*, and *Pleurotus atrocaeruleus* var. *minimus*.

New species from Manitoba described previous to the publication of *The Fungi of Manitoba* are the following:

<i>Didymosphaeria manitobiensis</i> Ell. and Ev.	<i>Marssonina Sonchi</i> Dearn. and Bisby
<i>Corticium septentrionale</i> Burt	<i>Septogloeum rhapaloideum</i> Dearn. and Bisby
<i>Peniophora odontoides</i> Burt	<i>Phyllosticta Dracocephali</i> Dearn. and Bisby
<i>Ptychogaster subciculoides</i> Lloyd	<i>Septoria Sonchi-arvensis</i> Dearn. and Bisby
<i>Cercospora manitobana</i> J. J. Davis	<i>Stagonospora Amorphae</i> Dearn. and Bisby
<i>Cylindrosporium sibiricum</i> Dearn. and Bisby	

These species will also be found in the List of Species. For the *Ptychogaster*, see *Sebacina incrustans*.

Vanterpool and Ledingham (55) described *Lagenia radicola* as a new genus and new species, and Vanterpool and Truscott (56) *Pythium volutum* as a new species and *P. arrhenomanes* var.

canadensis as a new variety, in their studies of the Phycomycetes associated with cereal roots in Saskatchewan. *Cucurbitaria staphula* is being described by Dearness from Saskatchewan, and *Plenodomus Meliloti* was published by Dearness and Sanford from Alberta. Brief notes on these fungi are given below.

Collections during the past six years have brought to light a few new species, but they will be described elsewhere, except for *Cercospora Haleniae* which is described below.

VIII. FUNGI APPARENTLY ABSENT

In *The Fungi of Manitoba* mild surprise was expressed at the absence from the province of certain fungi common in other parts of North America. Only a few species were mentioned, for the really surprising point is that so many of the fungi known in North America have a range including Manitoba. When a fungus is absent, it is usually because its host or substratum is absent. *Collybia radicata* was mentioned: but it depends largely upon the roots of *Fagus* for its subsistence, and the beech is absent from Manitoba. *Fistulina hepatica* has since been found, and is noted in the next Section. The absence of *Amanita caesarea* and *A. rubescens* was mentioned: they too probably depend upon phanerogams not present in Manitoba. Kauffman (*Agaricaceae of Michigan*) states for *A. caesarea*: "The present known range seems to be as far north as latitude 43°." If it really stops at the 43rd parallel of latitude, it is likely that some flowering plant upon which it depends does not extend north of 43°. It is still unknown why *Scleroderma aurantium* and *Plectania coccinea* are not found: but some substratum restriction is suspected for the latter at least. *Strobilomyces strobilaceus*, *Clitocybe illudens*, *Lepiota procera* and many other fungi appear to be absent for undetermined reasons, probably frequently because of the absence of various phanerogams.

Climatic factors, as previously mentioned (see 68) may exert little influence upon the distribution of fungi; in other words, a fungus usually can adapt itself to any climatic conditions tolerated by its hosts or substrata, which are principally Spermatophytes. Nevertheless, climate does affect certain fungi. It keeps *Puccinia glumarum* out of Manitoba, and perhaps *P. sauveolens*, and greatly favors *P. graminis*. It is noteworthy that countless hours amongst abundant mushroom hosts have failed to disclose a single specimen of *Nyctalis* or *Volvaria Loveiana* and only one of *Stropharia epimyces*. This may be because of climatic factors: but Dr. Dearness finds them to be extremely rare in the damper area around London, Ontario. Certainly the dry seasons, which come in more or less regular cycles in Manitoba, temporarily preclude the appearance of many species, and may account for the complete absence of some.

Many fungi found in Europe or Asia are absent from North America, and *vice versa*; yet about half the species found in Manitoba are known also in Europe.

IX. RARE SPECIES

Several fungi are rare in Manitoba because of some host relationship. *Fistulina hepatica* has been found but once: but no chestnut and only one species of oak occurs in Manitoba, and in many parts no oaks are present. For the same reason, probably, *Polyporus resinosus* is rare. *Polyporus sulphureus* and *P. squamosus* have been seen rarely, perhaps because of some undetermined lack in host or substratum. *Diplodia Zeae* is rare; but corn is not extensively grown.

Climatic factors doubtless explain the rarity of certain parasites of cultivated plants, such as *Urocystis Cepulae*, *Gibberella Saubinetii*, and *Puccinia anomala*.

No explanation is apparent for the more or less common occurrence in Manitoba of certain species rare or unknown in other parts of North America, for example *Claudopus mephitis*, *Crepidotus cinnabarinus*, *Clavaria Patouillardii*, *Helvella sphaerospora*, *Plectania hiemalis*. Possibly there is some substratum relationship or perhaps insufficient collecting elsewhere in North America. *Polyporus tuckahoe* (q.v.) presents a peculiar problem. Recorded from Manitoba and States. In Manitoba the fungus is widespread, yet evidently does not occur in the Red River Valley. A more thorough knowledge of this species would probably explain its distribution.

Several fungi given in the List of Species are rare not only in Manitoba but throughout North America. This is not surprising. The apparent rarity in some cases is due only to lack of knowledge of the exact place in which to look for the species. Most mycologists are grateful for the rare species, and would rather find a rare fungus than a new species.

X. ESTIMATES OF THE TOTAL NUMBER OF SPECIES OF FUNGI IN MANITOBA

In *The Fungi of Manitoba* estimates were made as to the total number of species present in Manitoba. These estimates were based upon numbers known in northern Europe, on Manitoba collecting records, and on comparisons with the fungi recorded from North Dakota. Further collecting during the past seven years has added over 600 species to those known in Manitoba; and the end is still far away. Little can be added to the estimates previously presented. There are probably at least five thousand species of fungi (as species are currently interpreted) actually present in Manitoba. The total may never, perhaps cannot ever, be known.

XI. STATISTICAL SUMMARY

TABLE II

SUMMARY OF THE NUMBERS OF FUNGI RECORDED IN MANITOBA AND SASKATCHEWAN

	At Univ. Man.	In Sask. only	In Sask. and Man.	Total in Sask.	Man. only	Total in Man.	Total included
Myxobact.-Acrasieae.....	4	-	-	-	4	4	4
Myxomycetes.....	76	1	5	6	93	98	99
Bacteria.....	18	1	14	15	11	25	26
Phycomycetes:							
Archimycetes.....	1	3	1	4	6	7	10
Oomycetes.....	22	8	20	28	23	43	51
Zygomycetes.....	32	-	5	5	42	47	47
Ascomycetes:							
Plect.-Exoascales.....	10	1	4	5	10	14	15
Helvellales.....	10	-	4	4	17	21	21
Pezizales.....	122	4	11	15	156	167	171
Phacid.-Hysteriales.....	18	3	5	8	32	37	40
Tuber.-Perisporiales.....	18	1	14	15	6	20	21
Hypocreales.....	23	2	3	5	27	30	32
Dothid.-Microthyr.....	4	2	3	4	9	11	13
Sphaeriales-Laboul.....	186	22	51	73	207	253	280
Basidiomycetes:							
Sporobolomycetales.....	3	-	-	-	3	3	3
Ustilaginales.....	24	6	22	28	20	42	48
Uredinales.....	65	37	109	146	47	156	193
Auric.-Trem.-Dacr.....	12	-	2	2	22	24	24
Thelephoraceae.....	77	1	9	10	123	132	133
Clavariaceae.....	11	-	-	-	25	25	25
Hydnaceae.....	19	-	1	1	50	51	51
Polyporaceae.....	69	-	20	20	85	105	105
Boletaceae.....	4	-	-	-	19	19	19
Agaricaceae.....	312	-	11	11	552	563	563
Gasteromycetes.....	19	-	9	9	31	40	40
Fungi Imperfecti:							
Moniliales.....	273	14	75	89	305	330	394
Melanconiales.....	32	2	17	19	48	65	67
Sphaeropsidales.....	163	15	59	74	181	240	255
Dermatophytes.....	-	-	-	-	11	11	11
Totals.....	1,627	123	473	596	2,165	2,638	2,761

From Table II it may be seen that the total number of species in each of the main groups is as follows: Myxothallophyta, 103; Bacteria, 26; Phycomycetes, 108; Ascomycetes, 593; Basidiomycetes, 1,204; Fungi Imperfecti, including Dermatophytes, 727. In a few cases entries under Ascomycetes are duplicated under the Fungi Imperfecti. The varieties are counted as distinct fungi, since a variety today may be considered a species to-morrow, and *vice versa*.

It will be noted that about 60% of all fungi included have been collected in the vicinity of the University of Manitoba, where the ground has been covered more thoroughly.

Several fungi enumerated as Manitoban in Table II above were collected just over the border in Ontario. Two of the Uredinales in the column marked "Saskatchewan only" were collected in Alberta. No entry in square brackets in the List of Species is counted here.

XII. HISTORY OF MYCOLOGY IN MANITOBA

A brief account of the development of mycology in Saskatchewan is given in Section IV. *The Fungi of Manitoba* gives details of the history of mycology in Manitoba up to the close of 1928. This historical account is here summarized and brought up to date.

The first definite observations of fungi in Manitoba were made by John Dearness, who in 1891 collected *Didymosphaeria manitobiensis*, described in 1892 by Ellis and Everhart. Dr. Dearness found a few other fungi now known to be common, including *Puccinia graminis*.

Dr. Buller came to Manitoba in 1904, and has studied the fungi nearly every autumn and winter since. He has published many important facts regarding the biology of the fungi. His broad knowledge of the fungi, including many European species, has been of invaluable assistance.

The Criddle brothers of Treesbank have long been interested in natural history. The late Norman Criddle collected and made drawings of various larger fungi; Mr. Evelyn Criddle has collected the rusts of the region, and Stuart Criddle has contributed to the knowledge of *Polyporus tuckahoe* and the fungi stored by squirrels.

Professor W. P. Fraser spent the years 1917 and 1918 at Brandon, Manitoba. He collected and cultured a number of rusts, and since 1918 has continued his mycological work in Saskatchewan. His studies of the Uredinales have made possible the comprehensive list presented below.

Messrs. I. L. Connors and G. R. Bisby arrived in Manitoba in 1920. Mr. Connors assisted Professor Fraser in his survey of the rusts of the Prairie Provinces and has done much mycological work before and since leaving for Ottawa in 1929. The Dominion Rust Research Laboratory at Winnipeg has continued with increasing activity since its establishment in 1923.

XIII. THE GROUPS OF FUNGI, AND ACKNOWLEDGMENTS TO MYCOLOGISTS

General observations on classes, orders, families, or genera of the fungi included are made here to avoid interpolations in the List of Species.

A list of fungi is of little value unless dependence can be placed upon the determinations. The writers therefore have sought expert opinion wherever possible, and are grateful to the mycologists now to be mentioned, who have spent much time and effort on specimens submitted to them. These specimens sent to other laboratories will facilitate further study of many species.*

The Myxobacteriaceae have been studied but little in Manitoba. The three species listed were determined at Winnipeg, and others have been seen. Careful search would no doubt bring to light several of the Acrasieae. Dictyostelium is fairly common.

The Myxomycetes have not been intensively collected in Manitoba. Nevertheless 92 species and 7 varieties have found their way into the herbarium. This is about 25% of the total known on earth: MacBride and Martin list 380 species in their recent book, *The Myxomycetes*. This work and Lister's *Mycetozoa* have been of great service. Dr. W. T. Elliott and Dr. John Dearness have examined many collections, and Miss Lister and Dr. G. W. Martin have determined a considerable number, particularly of the rarer species. The names of species can be considered correct unless doubt is expressed regarding them.

In *The Fungi of Manitoba* an attempt was made to summarize the Myxomycete flora of Canada, and it was found that 134 species and 15 varieties were then known for the Dominion. A few species are recorded here as additions to those previously known in Canada.

The bacteria parasitic on cultivated plants are included for the convenience of plant pathologists. Elliott's *Manual of Bacterial Plant Pathogens* has been used for identifications, but Migula's system of classification is followed. Dr. W. A. F. Hagborg, of the Rust Research Laboratory at Winnipeg, has assisted in preparing the list. Several bacterial diseases are injurious to crop plants in Manitoba and Saskatchewan.

* Future students of mycology in western Canada might well issue exsiccates similar to the *Fungi Dakotenses* distributed by Brenckle. Several fungi recorded herein could be determined only because the same species were sent out by Dr. Brenckle for mycologists everywhere to study.

The Fungi of Manitoba listed only 48 Phycomycetes. The present list contains 108 entries. There are still many more to be found in Manitoba and Saskatchewan. For the general arrangement of the Phycomycetes, Fitzpatrick's *The Lower Fungi—Phycomycetes* has been followed. Gaumann's (7) treatment of the genus *Peronospora* is used, although he draws specific distinctions very narrowly; twenty-five species are included for Manitoba and Saskatchewan. Species of *Peronospora* evidently thrive under relatively dry conditions. Other *Peronosporales* may be fairly numerous at the height of the cycle of precipitation in western Canada, as in 1927 and especially 1928 (see 72). Downy mildews are seldom really injurious to cultivated plants in the Prairie Provinces. A few Chytridiales only, of the many doubtless present, are here recorded. The only Ancylistales known were found in Saskatchewan. No member of the Blastocladales or Monoblepharidales has been recognized in the areas surveyed, but these orders are no doubt represented. Many undetermined Saprolegniales are present in the numerous lakes and streams. Forty Mucorales are known, including several in soil; but many undetermined species are known to be present. Director S. F. Ashby of the Imperial Mycological Institute at Kew has identified species of *Mortierella*. The Entomophthorales have not been studied adequately.

The lower Ascomycetes have had little study in western Canada, but many Pezizales and Sphaeriales have been found. Dr. F. J. Seaver has identified many of the Helvellales and Pezizales which are abundant in the damp woods, and Prof. H. H. Whetzel has collected and identified several species of *Sclerotinia* and *Ciboria*. The few records of Geoglossaceae probably indicate insufficient search rather than absence of species. Several of the inoperculate Pezizales will have to be studied anew when the North American species have become better understood. Seaver (14) is followed for nomenclature of the operculate species. Several Phacidiales have been found in Manitoba. A special effort has been made to collect the lignicolous Hysteriales, but the foliicolous species have not been collected intensively. Three species of Tuberales are known. The Perisporiales include several common and a few injurious powdery mildews, but no especial effort has been made to obtain the full host range of the species, nor have those found been studied critically. The conservative nomenclature of Salmon is followed. The Hypocreales are rather common; but the Dothidiales, which are abundant in warmer regions, are scarce in Manitoba.

The Sphaeriales occur in almost endless number and variety; they may be found fruiting in succession on every branch, twig or herb during the process of decomposition. The parasitic Fungi Imperfecti are often to be found fruiting as Sphaeriales on dead parts of plants, but little has been done in Manitoba and Saskatchewan to connect these stages. For coprophilous Sphaeriales the recent work of R. F. Cain (3) is followed, for Diaporthe that of L. E. Wehmeyer (17), and Dr. Wehmeyer has examined several collections. Dr. J. F. Brenckle, who has long studied fungi in the Dakotas, has been consulted in regard to various fungi, especially Sphaeriales. Dr. J. H. Miller has identified most of the Xylariaceae included. Dr. Dearness has, however, determined the large majority of Sphaeriales. *The North American Pyrenomycetes*, published by Ellis and Everhart in 1892, is still the best guide to many higher Ascomycetes of this continent.

The Laboulbeniales are apparently not common on the insects of western Canada. The two species were obtained by Dr. H. J. Brodie, who went over collections of insects and submitted specimens to the late Professor Thaxter for identification.

The Basidiomycetes are abundantly represented in Manitoba. *Sporobolomyces* has been studied in some detail by Dr. Buller (82, Vol. V.). The three species thus far found in Manitoba were all collected first by W. F. Hanna. Dr. Hanna has also examined most of the Ustilaginales. The smuts cause considerable damage to cereals in the Prairie Provinces, as elsewhere. Several smuts of native plants have been collected, but there are species yet to be found.

Certain of the Uredinales of Alberta, as well as all those known in Saskatchewan and Manitoba, are included. Mycologists and plant pathologists in the three provinces mentioned have for 20 years made special effort to collect rusts, so that the majority are now known. Professor W. P. Fraser has taken the lead in studying the rusts, and has cultured several species. Mr. I. L. Connors and the staff of the Dominion Rust Research Laboratory have also done much to extend the knowledge of the rusts, particularly the cereal rusts, as mentioned under the various species. Dr. J. C. Arthur has seen many of the rusts of western Canada and has been able to include the records in the distribution of Uredinales given in his *Manual of Plant Rusts*. This work is followed for the names in the present list.

The Auriculariales, Tremellales, and Daeryomycetales include a few common species and fewer rare ones, but these orders have never received particular study in western Canada. The

Thelephoraceae are very common on fallen wood in the great undisturbed forests of Manitoba. Dr. E. A. Burt named a considerable number of species about 1921. During recent years, and particularly in 1935, extensive collections of Thelephoraceae were sent to Dr. Irene Mounce and Dr. Mildred Nobles, who very kindly studied them in collaboration with Dr. L. O. Overholts and Miss E. M. Wakefield. Manitoba Thelephoraceae are now widely distributed in herbaria, and the names in the list of species can be considered accurate. The Thelephoraceae require much study with good herbaria and literature for correct identification. A few species are injurious to trees or timber; most of them play important rôles in disintegrating woody tissue in the forests.

The Clavariaceae are also present in numbers in the Manitoban woods. This family has not been studied carefully by the writers, but Professor W. C. Coker has identified most of the numerous specimens sent to him.

The Hydnaceae, particularly the difficult resupinate species, are also common. Dr. L. H. Miller has identified nearly all the resupinate forms and some others. Drs. Beardslee, W. C. Coker, Irene Mounce, E. A. Burt, and the late C. G. Lloyd have each named certain stipitate or other species from Manitoba. The nomenclature of L. H. Miller is followed whenever possible.

The pileate Polyporaceae of Manitoba are evidently mostly known. Continued collecting during the past six years has added only six species to the list given in *The Fungi of Manitoba*. Dr. Mounce has examined many specimens, and practically every species has also been verified by Dr. Overholts. The genus *Poria* is common, but not adequately known as yet.

The Boletaceae gave much worry until Dr. W. H. Snell worked over the Manitoban collections. The list now given is somewhat more extended than the previous one, and the species can be considered correctly determined unless a query is appended.

The Boletaceae and many Agaricaceae are restricted to the vicinity of certain trees or shrubs, with which they have mycorrhizal or other nutritional relationships. Several European workers have presented lists of larger fungi to be found associated with various woody plants. Dr. Buller has made a few similar studies, but little of this nature has been done in Manitoba.

The Agaricaceae thrive in the cool mixed forests which stretch across eastern Manitoba and northwestward into northern Saskatchewan. Fewer species are found in deciduous woods such as those around Winnipeg, and fewer still outside the woods. In dry seasons the mushrooms are relatively scarce; but in a mild autumn after a damp summer their abundance is comparable to that in northern Europe, the northeastern United States and adjacent Canada, and other good collecting areas.

The Agaricaceae have had to be determined for the most part by the two authors long resident in Manitoba, who could study fresh specimens with the aid of the good library facilities provided largely by A. H. R. Buller. He has critically examined mushrooms in Manitoba each autumn from 1904 to 1935, and has been able to recognize many species as identical with those he knew in Europe. G. R. Bisby has struggled with many with microscope and keys for identification. Dr. J. E. Lange of Denmark, the well known authority on the agarics, spent several days in the laboratory and field in September, 1931, and helped with many difficult identifications. The late C. H. Kauffman examined a few specimens. John Dearnness has been able to identify several. Dr. Alexander Smith has gone over the species of *Mycena* and several other species, and Dr. L. O. Overholts has identified most of the species of *Pholiota*. There are undoubtedly more than a thousand species of Agaricaceae in Manitoba, and 560 have been named. The present list has been made as accurate as possible. The more doubtful ones are queried, and dried specimens are available for experts to study in future. The List of Species is given in the belief that it will be useful to students of the Agaricaceae; and it adds to the knowledge of distribution of these fungi. Kauffman's *Agaricaceae of Michigan* has been followed for the most part for names and authorities of species, but many other works have been used in their identification.

Amanita muscaria is common in deciduous woods in Manitoba. A few other species of *Amanita* are to be found in autumn, principally in mixed woods. No case of mushroom poisoning in Manitoba has been noted since that in 1921, described in the preceding edition, in which seven members of one family died.

Armillaria mellea is very common, but other species of this genus are seldom found. *Cantharellus* is probably represented by few species aside from the half dozen listed. *Clitocybe* and *Collybia* would, however, have at least double the present number of entries if these genera were

thoroughly studied. Attempts have been made to key out most of the species of *Hygrophorus* found, but not always with success; there are several species of these fine mushrooms still to be identified in Manitoba. The genera *Lactarius*, *Lepiota*, and *Marasmius* are by no means adequately worked out in the province. Despite considerable collecting of *Mycena*, and the efficient efforts of Dr. A. H. Smith in determining the species, several remain undetermined. The species of *Russula* are very common, varied, and perplexing; in recent years this genus has been largely ignored despite its striking conspicuousness in the forests. *Tricholoma* also should have many more species entered.

Many of the *Rhodosporeae* have been discarded because they could not be determined with certainty. Only *Pluteus* and *Volvaria* are presented with an approach to completeness. Many of the *Rhodosporeae* appear to be rather rare.

In the *Ochrosporeae*, the genus *Cortinarius* has probably three times as many representatives as are given in the somewhat lengthy list below. This fine but large genus is not unduly difficult if one can set up his laboratory in the woods and study the species as they develop; but specimens brought back from a collecting trip are likely to reach the wastebasket unidentified. In *Cortinarius*, and frequently in other genera also, one meets species that do not seem to fit any key: there are probably a good many undescribed species of *Agaricaceae* in the unexplored Canadian forests such as those in Manitoba. It will be some time before mycologists in North America can have an adequate idea of species that are uncommon, for example as *Cortinarius violaceus* and *Lactarius indigo* are in Manitoba, but which, in contrast to those species, have no striking features to draw them into the vasculum. The species of *Crepidotus* and *Galera* found could usually be determined, but *Hebeloma* and *Inocybe* require much more work. The determinations of Dr. L. O. Overholts make *Pholiota* one of the better known genera of *Agaricaceae* in Manitoba.

Of the *Porphyrosporeae*, *Psathyra* and *Psilocybe* need study in Manitoba. In the *Melanosporeae*, studies by A. H. R. Buller and W. F. Hanna have clarified the difficult genus *Coprinus*; there are few areas in the world where *Coprinus* is known so well. The species of *Gomphidius* do not seem to be very well marked, and species of *Panaeolus* cannot always be identified.

The *Gasteromycetes* are classified as in *The Gasteromycetes of the Eastern United States and Canada* by Coker and Couch, so far as Manitoban species are included in that work, and these specialists have examined many collections. Certain earlier collections were sent to the late C. G. Lloyd. Dr. Zeller has identified the two species of *Hymenogasterales* which have been found. *Phallales* are rare in Manitoba. The *Lycoperdales* occur in their usual abundance, and the cosmopolitan *Nidulariales* are present.

The ubiquitous *Fungi Imperfecti* are represented in the List more particularly by parasitic or soil-inhabiting species, but many other forms are also included. Little has been done in western Canada to connect these fungi with their perfect stages. Every dead stem will be found to bear a *Phoma*, *Coniothyrium*, or other conidial fungus, and usually several of them; but there is little point in attempting to list these in the present state of our knowledge. When works like Grove's *British Stem and Leaf Fungi* are forthcoming in North America, then these *Fungi Imperfecti* can be studied further.

Dr. J. J. Davis of Wisconsin has identified a few parasites; Dr. Thom all species of *Aspergillus*, *Penicillium*, and similar forms. Dr. W. L. Gordon has studied a very large number of isolations of *Fusarium* from Manitoba and Saskatchewan and, with assistance when necessary from Drs. C. D. Sherbakoff and H. W. Wollenweber, has identified them; noteworthy progress has been made with this difficult genus. The species and varieties are listed according to the nomenclature of *Die Fusarien*, by Wollenweber and Reinking. Dr. C. Chupp or Dr. W. G. Solheim has examined nearly every species of *Cercospora* and *Cercosporaella*. Dr. J. E. Machacek has studied all species of *Helminthosporium* listed, and has helped with several other fungi. Mr. E. W. Mason of the Imperial Mycological Institute has helped the writers in many ways, particularly with identification of difficult *Dematiaceae*, and Dr. S. P. Wiltshire of the same Institute has studied several cultures. Dr. Dearnish has painstakingly studied very many of the *Fungi Imperfecti*. His summary (4) of the *Melanconiales* has been of much help.

XIV. VALE !

All five of the authors of this work have collected fungi in Manitoba. A glance at the pages preceding or following will give anyone with the instinct of a naturalist some idea of the pleasure that has come from finding so many fungi in the endless woods and fields, from studying them in the laboratory, from obtaining a more comprehensive idea of the fungus flora, and from broadening the conceptions of the distribution of the fungi.

In some quarters there has been a disposition to look upon collecting and determining fungi as "old-fashioned," or dilettante, or worse; but there is a growing realization that the workers of half a century or more ago left some of this work undone. Certainly no one, up to a few years ago, had any idea what fungi, if any, occurred in Manitoba and Saskatchewan. A sound superstructure of phytopathology requires a firm foundation of mycology, and much study of the fungi of specific areas is needed in many parts of the world.

Now all five of the authors have left Manitoba, although they hope to see fungi in or from the province in the future. But the work will go on in Manitoba and in Saskatchewan.

XV. LIST OF SPECIES

The fungi listed are from Manitoba whenever no abbreviation is given for a province, except that species marked "Minaki" or "Kenora" are from adjacent Ontario. If found in both Manitoba and Saskatchewan or in Saskatchewan only, the abbreviations are added to specify the provinces. "Univ." refers to the vicinity of the University of Manitoba, Winnipeg. Measurements and other data given refer to Manitoba or Saskatchewan collections. Often spore measurements only are given at the end of an entry. Rusts, smuts, and many common fungi need descriptive data only in occasional instances, and the entries in some groups are based largely on reports from specialists. The letter "c" is used for *circa*.

Efforts have been made to have all citations correct and consistent. Miss E. M. Wakefield and Mr. I. L. Connors have helped materially with the citations. It has been particularly difficult to decide upon proper capitalization of certain names of fungi and of hosts. It might be well to decapitalize all specific names of plants, as is done by an increasing number of botanists. The name of the person who identified a species is usually given only with the rarer fungi. Few species are illustrated here, but Dr. Buller and others have presented many illustrations of Manitoban fungi as noted herein. Many thanks are due to Mr. I. L. Connors and Dr. Irene Mounce for reading the manuscript critically, and to Dr. W. F. Hanna for supplying photographs of *Coprinus*, and for other help.

MYXOTHALLOPHYTA

MYXOBACTERIACEAE

Chondromyces aurantiacus (Berk. & Curt.) Thaxt. This species, or perhaps the var. *frutescens* Krzem., was determined from the description and figures of Krzemieniewski (several papers in *Acta Soc. Bot. Poloniae*, 1926-1930). It occurred on the mossy bark of *Populus* in a damp chamber; Univ.

— *crocatus* Berk. & Curt. Fairly common on damp dung cultures and the decaying stipes of small *Coprinus*; Univ. It is of a crocus-yellow color, and seems to fit the description of *C. crocatus*. Described and illustrated by Buller (82, vol. IV).

Myxococcus rubescens Thaxt. (*M. ruber* Baur). Produces pink to orange fructifications with spores 1-2 μ in diameter. From soil, and rather common as a coprophilous species in culture: Keewatin and Univ.

ACRASIEAE

Dictyostelium mucoroides Bref. Not uncommon on damp dung cultures in the laboratory: Univ. See Buller (82, vol. IV) for illustrations and discussion.

MYXOMYCETES

- Arcyria cinerea* (Bull.) Pers. Occasional on Populus wood and bark, and on old leaves; Univ.
 — *denudata* (L.) Wettst. Common on old Populus, etc.; Univ. and eastern Man. One collection considered by Miss Lister to be very near *A. carnea* G. Lister.
 — *ferruginea* Sauter. Found once on old Populus; Univ.; det. Miss Lister.
 — *incarnata* Pers. Throughout Manitoba on old wood.
 — *incarnata* var. *fulgens* Lister. Winnipeg; det. Miss Lister.
 — *insignis* Kalchbr. & Cooke. Four collections; Univ. Determined in part by Miss Lister.
 — *nutans* (Bull.) Grev. On old wood; Victoria Beach; det. Miss Lister.
 — *occidentalis* (Macbr.) Lister (*Lachnobolus* Macbride). On Populus, etc.; Univ., and collected by Cheesman (106) at Winnipeg.
 — *pomiformis* (Leers) Rost. One collection on old wood; Univ.; det. Miss Lister.
Badhamia macrocarpa (Ces.) Rost. Two somewhat doubtful specimens from Winnipeg.
 — *magna* Peck. Two collections, one on Populus; Univ.; verified by Miss Lister.
 — *panicea* (Fr.) Rost. On bark of Populus; Univ.; det. G. W. Martin.
 — *populina* Lister. On bark of fallen Picea; Clear Lake; det. Miss Lister, who writes "capillitium in part Badhamia-like, in part Physarum-like. The smooth peridium with a 'grain'... the tendency to form short pale or dark red-brown stalks, the dark rich-brown spores, slightly clustered, all agree with this species. Many spores show narrow or slender ridges, and lines free from the close warting covering the remainder of the surface. I have received a similar 'Physarum' form of this species from the late Professor Brandza on spruce bark from Neamtz, Roumania, that also was not perfectly developed."
 — *utricularis* (Bull.) Berk. On Populus; Victoria Beach; on wood; Univ.; det. Miss Lister.
Ceratiomyxa fruticulosa (Muell.) Macbr. Common, at least in eastern Manitoba in damp weather.
Cienkowskia reticulata (Alb. & Schw.) Rost. On Populus; Univ.; det. Miss Lister. Plasmodiocarps shorter than usual. Another collection examined by Dr. Martin was noteworthy in being sporangiate and without the transverse calcareous bars.
Comatrichia flaccida (Lister) Morgan. On old Populus; Univ.; det. G. W. Martin.
 — *irregularis* Rex. On old wood; Carman; coll. A. R. Skinner, det. Miss Lister.
 — *typhoides* (Bull.) Rost. Fairly common on old wood and leaves, Univ., Winnipeg.
Craterium leucocephalum (Pers.) Ditm. Rather common; Norway House to Univ.
 — *minutum* (Leers) Fr. Victoria Beach, Univ.
Cribraria dictydioides Cooke & Balf. On fallen Picea; eastern Man.; det. G. W. Martin.
 — *vulgaris* Schrad. (*C. aurantiaca* Schrad. in Macbride and Martin). A specimen, evidently this species, was collected on a fallen conifer; eastern Man.
Diachaea bulbillosa (Berk. & Broome.) Lister. This rare species on old deciduous wood; Univ. Dr. Martin considers the identification to be probably correct, although the sporangia are not perfectly mature. Previously recorded only from Ontario, Iowa, and southern Asia.
Dianema Harveyi Rex. One collection of this rare species on Populus; Univ. Stated by Miss Lister to be typical. Previously recorded only in Maine, Colorado and Great Britain.
Dictydiaethalium plumbeum (Schum.) Rost. Occasional on Crataegus, Fraxinus, etc.; Univ.
Dictydium cancellatum (Batsch) Macbr. Typical specimens on deciduous wood; Univ.
Diderma Chondrioderma (de Bary & Rost.) G. Lister. Specimens, apparently this species, were collected on Populus bark in eastern Man.
 — *effusum* (Schw.) Morg., probably variety *reticulatum* (Rost.) Macbr. On decayed leaves; Univ.
 — *globosum* Pers. This somewhat rare species has been collected on old wood five times; Kenora, Winnipeg, Univ.; det. W. T. Elliott and Miss Lister.
 — *?hemisphaericum* (Bull.) Hornem. Found by Dr. Dearnness on grass, etc., sent him from the University.
 — *radiatum* (L.) Morg. On wood, Lake of the Woods, Man.; det. W. T. Elliott.
 — *spumarioides* Fr. Rather common on old leaves and wood; Univ.
Didymium anellus Morg. On old leaves of Helianthus in a damp chamber; Univ.; coll. A. M. Brown; det. Miss Lister.
 — *crustaceum* Fr. On decayed Populus; Univ. A rare species; verified by G. W. Martin.

- Didymium difforme* (Pers.) Duby. This species has been found only in cultures in damp chambers in the laboratory on dung of cow and horse, and on old leaves; Univ.; det. G. W. Martin.
- *melanospermum* (Pers.) Macbr. On old *Populus*, *Picea*, *Viburnum*, etc.; Clear Lake, Univ., Victoria Beach.
 - *minus* Morg. One collection; Univ.; verified by G. W. Martin.
 - *squamulosum* (Alb. & Schw.) Fr. Common in Man. on old deciduous wood, dead herbs, etc.; also at Indian Head, Sask.
 - *xanthopus* (Ditmar) Fr. On wood, etc., in cultures in the laboratory; Univ.; det. Miss Lister.
- Enteridium Rozeanum* Wingate. Occasionally found in eastern Manitoba, and north to Norway House.
- Fuligo intermedia* Macbr. This western species was found on bark of *Populus* at Indian Head, Sask. by P. M. Simmonds. Spores mostly 10–12 μ in diameter.
- *septica* (L.) Weber. Common throughout the areas surveyed in Man. and Sask.
 - *septica* var. *candida* Pers. Also common in Man.
 - *septica* var. *rufa* Pers. Univ., Victoria Beach; probably common.
 - *septica* var. *violacea* Pers. One collection; Victoria Beach.
- Hemitrichia clavata* (Pers.) Rost. Very common throughout Manitoba.
- *serpula* (Scop.) Rost. Victoria Beach; det. Miss Lister.
 - *stipata* (Schw.) Macbr. (*Arcyria stipata*). Four collections on old wood of *Populus*, etc.; Univ.; det. Miss Lister and Dr. Elliott.
 - *vesparium* (Batsch) Macbr. Common on old deciduous wood, at least along the Red River banks.
- Lamproderma columbinum* (Pers.) Rost. One collection at Victoria Beach.
- *scintillans* (Berk. & Broome.) Morgan. On old leaves and fern fronds; Univ.
 - *violaceum* (Fr.) Rost. Victoria Beach. This and the preceding species determined by Miss Lister.
- Leocarpus fragilis* (Dicks.) Rost. Found occasionally in the coniferous areas along Lake Winnipeg.
- Licea fimicola* Dearness & Bisby. Described in the preceding edition (71: 52); type on horse dung in culture dish in the laboratory; Univ. First seen when the fresh dung had been a month in a damp chamber, and continued to appear for a month. Also on old cow dung placed in a moist chamber Nov. 8, 1931; sporangia found Jan. 21, 1932. These two collections are the only ones known of this species. The latter material, with larger spores (mostly 16–20 μ in diam.), was utilized by Dr. Martin to supplement the original description (see "The Myxomycetes," page 229). An inconspicuous but distinct species. A creeping plasmodium has not been seen, being apparently within the substratum; but upon appearing preparatory to forming sporangia it is pale pink. The spindle-shaped sporangia stand erect, but without any definite stalk.
- Lycogala epidendrum* (L.) Fr. Very common on old wood in Man. and Sask.
- *flavofuscum* (Ehrenb.) Rost. Collected at Winnipeg by Cheesman; not found by the writers.
- Mucilago spongiosa* (Leyss.) Morg. Common in Man. and Sask.
- Oligonema nitens* (Lib.) Rost. Occasional on *Salix*, etc.; Univ.
- Ophiotheca vermicularis* (Schw.) Masee. On old leaves in a moist chamber; Univ.; verified by G. W. Martin.
- Perichaena corticalis* (Batsch) Rost. Common on bark of *Populus*; Univ. and Victoria Beach. Det. Miss Lister and Dr. Elliott. Macbride and Martin report it as "apparently not common" in Iowa and elsewhere.
- *depressa* Lib. Rarely found; Univ. One collection was stated by Miss Lister to have "the convex sporangia of *P. corticalis* and the slender regular capillitium of *P. depressa*, and appears to be intermediate between these two closely allied species."
 - *quadrata* Macbr. Found by Dr. Dearness on wood of *Fraxinus* sent him from the University grounds.
- Physarella oblonga* (Berk. & Curt.) Morg. One collection on an old fungus; Univ.
- Physarum auriscalpium* Cooke. On old *Populus*, etc.; Univ., Berens River; det. Miss Lister, in part.

- Physarum bitectum** Lister. On bark of *Populus* and on deciduous wood; Univ.; det. G. W. Martin and W. T. Elliott.
- **bivalve** Pers. (*P. sinuosum* (Bull.) Weinm.) On moss and pine needles; Kenora, Winnipeg.
 - **cinereum** (Batsch) Pers. Occasional on grass; Univ.
 - **compressum** Alb. & Schw. Old wood, and occasionally coprophilous. Four collections; Univ.; det. in part by Miss Lister.
 - **contextum** Pers. On *Populus*, *Abies*, etc.; across southern Manitoba.
 - **didermoides** (Achar.) Rost. Reported from Winnipeg Beach by Cheesman; on moss near Lac du Bonnet; det. G. W. Martin.
 - **flavicomum** Berk. Old wood; Univ.; det. Miss Lister. Previously found near Ottawa, occasional in the U.S.A.; not known in Europe.
 - **?galbeum** Wingate. One rather doubtful collection; Univ.
 - **globuliferum** (Bull.) Pers. On *Populus*, etc.; Univ.
 - **leucophaeum** Fr. Two collections; Univ. and Winnipeg.
 - **notabile** Macbr. (*P. connatum* (Peck) (Lister). On old *Populus*, etc.; Univ., Winnipeg; not uncommon.
 - **nutans** Pers. On debris, old *Populus*, etc.; Univ.; on decayed *Picea*; Berens River; det. G. W. Martin.
 - **nutans** var. **robustum** Lister. One collection; Univ.
 - **oblatum** Macbr. (*P. Maydis* (Morg.) Torrend). On old *Populus*, etc.; Univ.; det. in part by Miss Lister.
 - **rubiginosum** Fr. On old leaves and moss; Berens River, Victoria Beach; det. W. T. Elliott and G. W. Martin. A striking species, reddish-brown to scarlet-orange.
 - **sulphureum** Alb. & Schw. On old herbaceous stem; Univ.; det. G. W. Martin. A rare species. The specimens were atypical in being more or less sessile.
 - **viride** (Bull.) Pers. On *Populus*, etc.; Univ., Victoria Beach.
 - **viride** var. **incanum** Lister. Two collections; Univ.
- Reticularia Lycoperdon** Bull. Occasional; Univ. and eastern Man.
- Stemonitis ferruginea** Ehrenb. (*S. axifera* (Bull.) Macbr.). Common, at least in eastern Man.
- **ferruginea** var. **violacea** Meyl. This beautiful form, apparently previously known only in Europe and rare there, was collected on decaying leaves; Univ.; July; det. Miss Lister.
 - **fusca** Roth. Common across Man. and into Sask.
 - **?pallida** Wingate. One somewhat doubtful record; Univ.
 - **virginiensis** Rex. On deciduous wood; Univ.; det. G. W. Martin. Macbride and Martin record this species in North America only from Virginia, Iowa, Oregon and California.
- Trichia contorta** (Ditmar) Rost. Three collections, on *Populus*, etc.; Univ.
- **decipiens** (Pers.) Macbr. Not uncommon; Univ., Winnipeg.
 - **favoginea** (Batsch) Pers. This fine species was collected near Kenora; det. Miss Lister.
 - **floriformis** (Schw.) G. Lister. Victoria Beach; det. Miss Lister, who found the specimens to be typical.
 - **inconspicua** Rost. On bark of *Populus*; Univ.; det. G. W. Martin; two collections on bird droppings; Univ.; det. J. Dearness.
 - **persimilis** Karst. Two collections, Univ.
 - **scabra** Rost. One collection; Lake of the Woods, Man.
 - **varia** Pers. Not uncommon; Univ. to Victoria Beach.
- Tubifera Casparyi** (Rost.) Macbr. Only one collection, and that somewhat doubtful; on *Cornus*; Univ.
- **ferruginosa** (Batsch) Gmelin. Two collections; Victoria Beach.

BACTERIA

BACTERIA PARASITIC UPON CULTIVATED PLANTS

- Bacillus amylovorus** (Burr.) Trev. On *Pyrus baccata* and other cultivated species of *Pyrus* in Man. and Sask.; on *Prunus nigra* at Dauphin, Man.; on *P. ?Besseyi* (cult.); Saskatoon, Sask. Fire-blight of apples has been present for twenty years or more at Morden, Man., having doubtless arrived with nursery stock. It is very injurious in a damp spring, such as 1935, on most of the types of apples that will grow in the Prairie Provinces. The disease first reached the Univ. of Man. orchard in 1925, but thorough pruning has held it in check;

- it is now widespread in Man. Fire-blight was first reported from Sask. in 1932, when twig infections were noted at Saskatoon; it became prevalent in 1933 and 1934 and caused considerable damage in various parts of Sask. ("Erwinia" is now used for "Bacillus").
- Bacillus carotovorus** L. R. Jones. Common on *Apium graveolens*, *Brassica oleracea* vars. *botrytis* and *capitata*, Iris sp.; Winnipeg and vicinity.
- **Lathyri** Manns & Taub. Streak disease of *Lathyrus odoratus*, probably caused by *B. Lathyri*, has caused some injury in Winnipeg.
- **phytophthorus** Appel. Black-leg of *Solanum tuberosum* is common in Man. and Sask. It sometimes necessitates the rejection of potatoes for certification. *B. phytophthorus* is near to, or possibly a form of, *B. carotovorus*.
- **Sorghi** Burr. On *Holcus sudanensis* and *Zea Mays* in Man.; on the former host also at Indian Head, Sask. Conspicuous spots with purple borders are produced.
- **?tracheiphilus** E. F. Smith. Wilt of *Cucumis sativus* is occasionally seen in Man., but the causal agent has not been studied.
- Bacterium Agropyri** (O'Gara) Stev. On *Agropyron Smithii*; Pangman, Sask.
- **?gummisudans** McCull. On leaves of *Gladiolus*; Winnipeg. This and the next species would be classified in *Pseudomonas* in the Migula system, but apparently the combinations have not been made.
- **marginatum** McCull. Occasional on *Gladiolus* sp. in Winnipeg.
- **michiganense** E. F. Smith. Sometimes injurious on *Lycopersicum esculentum*; Brandon, Winnipeg. Cultures from affected plants gave non-motile bacteria in yellow colonies.
- **striafaciens** Ch. Elliott (a *Pseudomonas*). Common on leaves of *Avena sativa* in Man.; reported on *A. fatua* at Duck Lake, Sask.
- Frankiella Alni** (Woron.) Maire & Tison (*Plasmodiophora Alni* Woron.). Common on roots of *Alnus incana* in Man. Maire and Tison state (Ann. Myc. 7: 242, 1909) that the organism found in the common galls on alder roots should be classified in the Schizomycetes, and Roberg (Jahrb. Wiss. Bot. 79: 472) names it *Actinomyces Alni*.
- Pseudomonas atrofaciens** (McCull.) Stev. Common on *Triticum aestivum* and *T. durum* in Man. and Sask. Produces basal glume-rot of wheat heads; but found by W. A. F. Hagborg also on leaves and stems of wheat, not uncommonly in association with *P. translucens* var. *undulosa*; occasionally isolated from *Hordeum vulgare*.
- **campestris** (Pammel) E. F. Smith. Black rot of Cruciferae has been reported in Man., but no specimens have been studied.
- **carotae** Kendrick. On leaves of *Daucus carota*; Brandon. Collected, isolated and identified by Dr. Hagborg.
- **coronafaciens** (Ch. Elliott) Stev. On leaves of *Avena sativa* in Man. and Sask. *Bact. striafaciens* seems to be commoner than *P. coronafaciens* in Man.
- **Delphinii** (E. F. Smith) Stapp. Common and injurious on *Delphinium* spp. across Man. and at Indian Head, Sask.
- **glycinea** Coerper. On leaves of *Glycine max*; Univ., Man., Indian Head and Scott, Sask.
- **lachrymans** (E. F. Smith & Bryan) Ferraris. Sometimes injurious on leaves of *Cucumis sativus* in and near Winnipeg.
- **Phaseoli** E. F. Smith. Often injurious on *Phaseolus vulgaris* in Man. and Sask.
- **Pisi** Sackett. A bacterial spot on *Pisum sativum*, Univ., is presumed to be caused by *P. Pisi*.
- **radicicola** (Beyerinck) Moore. The legume tubercle organism is, of course, present on native as well as cultivated Leguminosae.
- **translucens** (L. R. Jones, Johnson & Reddy) Stapp. Widespread on leaves of *Hordeum vulgare* in Man. and Sask. First collection in 1920 at Univ., Man.
- **translucens** var. **Secalis** (Reddy, Godkin & Johnson) Stapp. On leaves of *Secale cereale*; Carman and Univ., Man., Dysart, Indian Head and Rosthern, Sask.
- **translucens** var. **undulosa** (E. F. Smith, Jones & Reddy) Stapp. Common and sometimes injurious on *Triticum aestivum* in Man., and at Saskatoon, Sask.; isolated once from *Hordeum vulgare* by W. A. F. Hagborg. Black chaff is injurious on certain varieties of wheat, and was particularly common in Man. in 1928, 1933 and 1935. It has been found on leaves, stems and heads. See Hagborg (193) for details.
- **tumefaciens** (E. F. Smith & Towns.) Stev. Crown gall is occasionally found on *Prunus* sp. and *Rosa* sp.; Brandon and Univ.

EUMYCETES

PHYCOMYCETES

CHYTRIDIALES

Membranosorus Heterantherae Ostenfeld & Petersen. Recorded (Zeit. Bot. 23: 13, 1930) as a new genus and species on *Heteranthera dubia*; Lake of the Woods, Ontario (near the Manitoba boundary). Wernham (Mycologia, 27: 262) points out that this fungus is probably a *Sorodiscus*. It has not been seen by the writers.

Olpidiaster radialis (de Wild.) Pascher (*Asterocystis radialis* de Wild.). Found by Vanterpool (50) in roots of *Avena sativa*, *Hordeum vulgare*, *Secale cereale*, and *Triticum aestivum*; not a serious parasite. Apparently a normal inhabitant of Saskatchewan soils. Not yet found in Manitoba. Bartlett (Trans. Brit. Myc. Soc. 13: 221) calls this fungus *Olpidium radialis* de Wild. (= *O. Borzii* de Wild.).

Physoderma maculare Wallr. (*Cladochytrium maculare* Graff). On *Alisma Plantago-aquatica*; Univ. and Boissevain; probably fairly common. Resting spores $30-40 \times 24-33 \mu$.

— **Menyanthis** de Bary. On *Menyanthes trifoliata*; at Gimli, and common at Clear Lake. Spores $25-30 \mu$.

Synchytrium aecidioides (Peck) Lagerh. (*S. decipiens* Farl.). Abundant on *Amphicarpa monoica*; Univ. to Dauphin. Produces small galls on leaves and stems, with spores $18-24 \mu$ in diameter.

— **aureum** Schroet. On *Petalostemum candidum*; Brandon.

Urophlyctis pluriannulata (Berk. & Curt.) Farl. Rare on *Sanicula marilandica*; Winnipeg; 1918; coll. W. P. Fraser; Birds Hill; 1935; coll. I. L. Connors & G. R. Bisby. Spores c. $40-50 \mu$.

— **pulposa** (Wallr.) Schroet. On *Chenopodium glaucum* on alkaline soil; Brandon, Man.; on *C. album*, Assiniboia, Sask. Resting spores in both collections mostly $40-50 \mu$ in diameter, somewhat larger than given in Rabenhorst's Kryptogamenflora.

ANCYLISTALES

Lagena radicola Vanterpool and Ledingham (55). This new genus and species was described as a parasite of rootlets of *Triticum aestivum*, *T. durum*, *Hordeum vulgare*, *Secale cereale*, and *Zea Mays*; Regina and elsewhere in southern Sask. Not yet found in Manitoba, but recorded by Truscott (Mycologia, 25: 263) from Vineland, Ont. The life history has been worked out except for the germination of the resting spores.

Lagenidium sp. On *Spirogyra* sp.; Saskatoon, Sask. Parasites of algae have also been observed in Manitoba by Professor Lowe, but these fungi have not yet been studied.

SAPROLEGNIALES

Saprolegnia ferax (Gruith) Thuret. On bait placed in water; Univ. Various Saprolegniales have been seen, but not studied, in Manitoba; in Saskatchewan species of *Achlya* and *Aplanes* have also been found, but not fully determined.

— **parasitica** Coker. Identified by P. H. Gregory from infected goldfish; Winnipeg.

PERONOSPORALES

Albugo Bliti (Biv.-Bern.) O. Kuntze. Often injurious to the weed *Amaranthus retroflexus* in Man. and Sask.; on *Monolepis Nuttalliana*; Kelwood, Man., Saskatoon and Scott, Sask. (The generic name *Cystopus* should perhaps be used instead of *Albugo*.)

— **candida** (Pers. ex. Lév.) O. Kuntze. On *Brassica arvensis*, *B. juncea*, *Capsella Bursa-pastoris*, *Lepidium apetalum* (*L. densiflorum*), *Sisymbrium altissimum* in both Sask. and Man.; on *Arabis glabra*, *Camelina microcarpa*, *Neslia paniculata*, *Radicula palustris*, *Raphanus sativus*, *Sisymbrium incisum* in Man.; on *Sisymbrium Sophia* and *Tropaeolum majus* in Sask. A widespread and common fungus. Togashi and Shibasaki (abst. in Rev. Appl. Myc. 14: 1) report morphologic and biologic forms of this fungus in Japan.

— **Portulacae** (DC.) O. Kuntze. On *Portulaca oleracea*; southern Man. and westward to Saskatoon, Sask.

— **Tragopogonis** (Pers.) S. F. Gray. On *Artemisia biennis* and *Cirsium arvense* in Man. and Sask.; on *Ambrosia psilostachya* in Man.; on *Cirsium* sp., *Iva axillaris*, *Tragopogon dubius*, *T. porrifolius*, and ?*Dimorphotheca* sp. in Sask.; widely distributed.

Basidiophora Kellermanii (Ell. & Halst.) G. W. Wilson. Common on *Iva xanthifolia* in Man.

- Bremia Lactucae** Regel. On *Lactuca pulchella*; Swan River, Man.; Annaheim and Lake Waskesiu, Sask.; on *L. sativa*; Indian Head, Sask.
- Peronospora aestivalis** Syd. ex Gäum. Not uncommon on *Medicago sativa*, especially in damp seasons; Univ. and Brandon, Man.; Indian Head, Sask. Causes some injury to alfalfa, but has not been found to be serious, although it has been known in Manitoba since 1921.
- **alta** Fuckel. On *Plantago major*; Minaki, Berens River, Birtle, Brandon and Univ. Common in 1928, but found also in 1925 and 1935.
- **Artemisiae-biennis** Gäum. On *Artemisia biennis*; Scott, Sask. Known also in Minnesota and North Dakota.
- **Arthuri** Parl. On *Oenothera biennis*; Killarney and Virden, Man., during the damp summer of 1928; also at Saskatoon, Sask.; on *O. strigosa*; Grand Coulee, Sask.; 1936.
- **Astragali** Syd. On *Astragalis canadensis*; Aweme; 1928.
- **borealis** Gäum. On *Galium boreale*; Clear Lake, Man., Indian Head, Sask. The host may be considerably distorted. Gäumann reports it from Ontario and Wisconsin.
- **Brassicae** Gäum. On *Brassica arvensis*; Univ., Man.; on *B. juncea*; Univ. and Valley River, Man.; Gray and Saskatoon, Sask.
- **Camelinae** Gäum. On *Camelina microcarpa*; Brandon; coll. W. P. Fraser. No previous North American record has been seen.
- **Corydalis** de Bary. On *Corydalis glauca* (*C. sempervirens*); Kenora, Berens River, Norway House. Rather common in cool forests of eastern Manitoba; on *C. aurea*, Dauphin.
- **Echinosporni** Swingle. On *Lappula echinata*, Saskatoon and Sutherland, Sask. Gäumann records this fungus from Korea, Russia and Kansas only.
- **Erysimi** Gäum. On *Erysimum cheiranthoides*; in Manitoba and at Saskatoon, Sask.
- **Gei** Syd. ex. Gäum. On *Geum strictum*; Berens River, Clear Lake; on *G. triflorum*, Griswold. Probably this species, although neither of these species of *Geum* is recorded by Gäumann. The Clear Lake specimen bore conidia $16-19 \times 15-18 \mu$, which is about the usual size for this species.
- **grisea** Unger. On *Veronica peregrina*; Berens River; 1933. Gäumann was not certain as to the disposition of the *Peronospora* on this host.
- **Jaapiana** Magn. One collection on leaves of *Rheum Rhaponticum*; Valley River; 1924.
- **Lepidii-sativi** Gäum. Present in 1925 on *Lepidium sativum* ("broad-leaved cress" and "curled cress," cult.); Univ.; also found at Saskatoon, Sask.
- **Lepidii-virginici** Gäum. On *Lepidium apetalum*; Brandon, Man.; common at Saskatoon, Sask.
- **narbonensis** Gäum. On *Vicia americana*; Dauphin, Univ. Gäumann reports it from Iowa, Kansas and Colorado on this host.
- **parasitica** (Pers.) Fr. Widely distributed in Man. and Sask. on *Capsella Bursa-pastoris*. A collection on *Sisymbrium altissimum* is included here, since Gäumann does not record this host; Saskatoon, Sask.
- **Potentillae** de Bary. On *Potentilla monspeliensis*; Wakaw and Lake Waskesiu, Sask.
- **Schachtii** Fuckel. On *Beta vulgaris* var. *cicla* (Swiss chard); Sutherland, Sask.
- **Schleideniana** W. G. Smith. On *Allium Cepa*; Indian Head, Sask.; 1927. This is the only record of downy mildew of onion in the Prairie Provinces.
- **Sophiae-pinnatae** Gäum. On *Sisymbrium incisum*; Berens River, Brandon.
- **Spinaciae** Laub. Sometimes injurious to *Spinacia oleracea*; Univ., market gardens around Winnipeg and Brandon, Man.; also common in Sask.
- **?sulfurea** Gäum. On *Artemisia* sp.; Killarney; J. E. Machacek; 1935. The conidia measured about $30-36 \times 18-20 \mu$, and the fungus seems to fit *P. sulfurea*, which is known from North Dakota.
- **variabilis** Gäum. Common and widespread on *Chenopodium album* in Man. and Sask.
- **Viciae-sativae** Gäum. On *Vicia americana* var. *angustifolia* (*V. sparsifolia*); Dana, Prud'homme and Saskatoon, Sask. Tufts violet; spores $26-30 \times 17-20 \mu$. Recorded on this host (as *V. linearis*) by Gäumann from North Dakota and Kansas. It seems doubtful that this is really distinct from *P. narbonensis*.
- Phytophthora infestans** (Mont.) de Bary. On *Solanum tuberosum* in Man. No specimens of the late-blight of potato were seen in Man. by the writers until 1927, when affected tubers were sent in from Otterburne, Miami and Portage la Prairie. The succeeding year, 1928,

was damp, and considerable damage to potato vines occurred at the Univ., around Winnipeg, and in much adjacent territory. Tuber-rot was not serious in 1928. The fungus has not been found since.

- Phytophthora parasitica** Dastur. On *Gilia linearis*; Reston; W. L. Gordon; 1928. One collection only, and there is some uncertainty about the name. But the fungus seems to fit the widespread *P. parasitica*, and Gäumann (7, p. 174) is inclined to think that *Peronospora Gilias* Ell. & Ev. may belong to *Phytophthora parasitica*.
- **Thalictri** G. W. Wilson & J. J. Davis. On *Thalictrum dioicum*; Univ.; 1928; on *T. ?dasy-carpum*; Clear Lake; 1935.
- Plasmopara Geranii** (Peck) Berl. & de Toni. On *Geranium maculatum*; Berens River; 1933.
- **Halstedii** (Farl.) Berl. & de Toni. On *Ambrosia psilostachya*, *Bidens frondosa*, *Helianthus annuus*, *H. maximiliana*, *H. petiolaris* and *Rudbeckia laciniata*; University to Brandon and Dauphin, Man.; on *Helianthus annuus* and *H. subrhomboides* in Sask. Rather common in damp seasons; sometimes injurious to *H. annuus*.
- **obducens** Schroet. On *Impatiens biflora*; Swan River and Berens River.
- **pygmaea** (Ung.) Schroet. On *Anemone canadensis*; found once in western Man.; common in Sask.
- **ribicola** Schroet. On *Ribes oxycanthoides*; Minaki, Univ.
- **Viburni** Peck. On *Viburnum Opulus*; Univ., Gimli. Found only in 1927 and 1928.
- **viticola** (Berk. & Curt.) Berl. & de Toni. On cultivated *Vitis* sp.; Univ. and Morden in 1927, causing considerable injury to the few grape vines present. No definite record of a previous occurrence, nor has the mildew been found since 1927, although 1928 was a favorable year for downy mildews; evidently the fungus was killed during the winter. It has not been found on the native *V. vulpina*.
- Pseudoperonospora Humuli** (Miyabe & Takah.) G. W. Wilson. On *Humulus Lupulus* in the woods; University and Minaki; Sept. 1928. No further collection of this interesting fungus has been made in Manitoba, perhaps because of drier conditions in recent years. Oospores are present in both collections.
- Pythium arrhenomanes** Drechsler var. **canadensis** Vanterpool and Truscott (56:76). Type of the variety isolated from *Triticum aestivum* showing "browning root rot" in Saskatchewan in 1929. Also parasitic on roots of *Avena sativa*, *Hordeum vulgare*, *Secale cereale*, and *Zea Mays*. Browning root rot has also been found in western Manitoba, but the *Pythium* present has not been studied. This species is widely distributed in Sask., and has been isolated from *Agropyron cristatum*, *A. repens*, *A. tenerum*, *Avena fatua*, *Bromus inermis*, *Phalaris arundinacea*, *Phleum pratense* and *Setaria viridis* (Can. Plant Disease Survey Report for 1934). Rands and Dopp (Journ. Agric. Res. 49:189) were inclined to include this variety as a "geographic strain" of *P. arrhenomanes*. Vanterpool (52) found that the fungus produced toxins injurious to cereals.
- **de Baryanum** Hesse. Sometimes present as a cause of damping off of seedlings in Saskatchewan and Manitoba, including *Linum usitatissimum* in Sask. (Vanterpool, 53).
- **de Baryanum** var. **Pelargonii** H. Braun. Isolated from diseased *Pelargonium zonale* in a greenhouse; Winnipeg; det. T. C. Vanterpool (Can. Plant Disease Survey Report for 1931: 93).
- **ultimum** Trow. In basal stem rot of cuttings of *Pelargonium zonale* in a greenhouse at Saskatoon, Sask. (T. C. Vanterpool; Can. Plant Disease Survey Report for 1934: 84) and, *fide* Vanterpool, more common than *P. de Baryanum* as a cause of damping off of seedlings in "flats" in Man. and Sask.
- **volutum** Vanterpool & Truscott (56:77). Type culture from rotted roots of *Triticum aestivum*, Tisdale, Sask., 1929. Also pathogenic to the roots of *Avena sativa*, *Hordeum vulgare*, *Secale cereale*, and *Zea Mays*. Not found to be so widely distributed in Sask. as *P. arrhenomanes* var. *canadensis*. Not yet found in Manitoba. Luijk (Mededeel. Phytopath. Lab. "Willie Commelin Scholten," Baarn, 13: 1-22, 1934) found this species parasitizing grass in Holland. Vanterpool (personal communication) found *P. volutum* to be capable of parasitizing various grasses in Sask.
- Sclerospora graminicola** (Sacc.) Schroet. On *Setaria viridis*; Boissevain, Man.; common at Brandon, Man., in 1928; found at Indian Head and Oxbow, Sask., and on *S. italica* at Indian Head, Sask.

MUCORALES

- Absidia glauca* Hagem. Two isolations from soil, both of the + race.
- *orchidis* (Vuill.) Hagem. Isolated twenty times from Manitoba soil, from the surface to the C horizon; especially from forest soil.
- *spinosa* Lendner. Obtained 35 times from soil, especially in the A horizon of grass land; once from butter.
- Chaetocladium Brefeldii* van Tiegh. & Le Mon. On culture of horse dung, probably parasitic on *Mucor Mucedo*; Univ.; Spores about 4μ .
- Cunninghamella elegans* Lendner. Four isolations from surface soil in Man.; on wheat plants; St. Brieux, Sask. Species of *Cunninghamella* are sometimes used to test the phosphorus content of soil.
- *verticillata* Paine. One isolation from butter. Very similar to the preceding. Conidia oval, $10-14\mu$ long, spiny.
- Endogone malleola* Hark. Kanouse (Mycologia, 28: 60) places this in *Modicella*. On the ground and on decaying leaves in the woods; Univ.; June—July. Sporangia $60-84 \times 42-60\mu$; spores $12-20\mu$. Determined by Dr. Leva B. Walker, who has studied the development of this species (Mycologia, 15: 245).
- Mortierella elasson* Sideris & Paxton. Seventy-one isolations from soil in Man., particularly from the lower horizons of meadow soil; from roots of *Triticum aestivum* in Sask. Spores $2.5-4 \times 3-6\mu$.
- *isabellina* Oudem. var. *ramifica* Dixon-Stewart. Forty isolations from soil and peat, usually in the upper horizons. Spores $2-2.5\mu$.
- *vinacea* Dixon-Stewart. Sixty isolations from soil, especially forest soil and peat, usually in the upper horizons. Spores $2-3\mu$. Described in Australia, then found in Man., and recently (Flora, 130: 208) in Germany.
- Mucor ?abundans* Povah. Four isolations from soil.
- *circinelloides* van Tiegh. Two isolations, apparently this species, from butter.
- *dispersus* Hagem. Occasional in soil. Spores up to $15 \times 12\mu$.
- *hiemalis* Wehmer. Rather common in forest soil.
- *Mucedo* (L. p.p.) Bref. A common coprophilous fungus, often covering the substratum in a few days.
- *racemosus* Fresen. Also a common coprophilous fungus, and rather frequent in soil, especially from wheat fields. Chlamydospores are abundant in the exhausted mycelium; spores up to $10 \times 8\mu$.
- *spinescens* Lendner. From flour and milk powder in a bakery which was having trouble with molds; Winnipeg. The columellae bear projections.
- *?sylvaticus* Hagem. One isolation from soil. Spores of two sizes.
- *?varians* Povah. Obtained from soil.
- Phycomyces Blakesleeanus* Burgeff (*P. nitens* Auct.). Rare on dung cultures; Univ.
- Pilaira anomala* (Ces.) Schroet. This fungus has never been found in Manitoba on dung of horse or cow, but a number of sporangiophores were finally obtained on rabbit dung collected near Beausejour on Sept. 29, 1935 and placed in a damp chamber. Sporangioophores were noted arising after two days; next day they had a yellow swelling at the apex, but were not mature until the fourth day. The spores were mostly $8-10 \times 4-5\mu$; a little narrow for *P. anomala*, but otherwise the fungus was as described by Grove (82, Vol. VI: 217).
- *Moreau* Ling. Along with the preceding species there developed a *Pilaira* with spores $14-20 \times 10-12\mu$. This seems to be the first American record of *P. Moreau*.
- Pilobolus crystallinus* Tode. Although earlier records of this species from Manitoba are doubtful, an abundant development appeared on fresh deer dung collected on Sept. 29, 1935 near Beausejour and placed in a damp chamber. A few specimens appeared after four days, many after five days, and for a week or more thereafter. The trophocyst was short, as was the sporangiophore. The spores were $6-8 \times 4\mu$; the discharged sporangia on glass from $150-300\mu$ in diameter. These small dimensions suggest *P. roridus*, but that is a rather uncertain species. *Pilobolus* is discussed and illustrated in detail by Buller and Grove in *Researches on Fungi*, vol. VI.
- *Kleinii* van Tiegh. Common, particularly on horse dung, in Manitoba. (See 93.)
- *longipes* van Tiegh. Also common on horse dung in Man.

- Pilobolus oedipus* Mont. On remains of algae on mud beside the Red River, Winnipeg; C. W. Lowe. One collection only.
- *umbonatus* Buller. On horse dung; Winnipeg. This interesting new species is described by Buller (82, vol VI). Spores $5-6 \times 3-3.8 \mu$; sporangium distinctly umbonate.
- Piptocephalis Freseniana* de Bary. Occasionally found parasitizing Mucorales; Univ., Winnipeg.
- Rhizopus elegans* Eidam. Rather common in Manitoba soil. Spores $5-8 \mu$.
- *nigricans* Ehrenb. ex Fr. Common as a laboratory "weed"; in decaying fruits and vegetables; fairly common in the soil; sometimes isolated from cereal roots. Zygospores occasionally obtained in Man. and Sask. Protoplasmic streaming, etc., discussed and illustrated by Buller (82, vol. V).
- *nodosus* Namysl. One isolation from butter. Swellings occur in the sporangiophores; spores $5-9 \times 4-6 \mu$, striate. Probably the same as *R. arrhizus* Fisch.
- *rhizopodiformis* (Cohn) Zopf (*R. Cohnii* Berl. & de Toni). Isolated from the lung of a chicken, together with *Aspergillus fumigatus*, q.v. Plates incubated at 37° C. Spores $4-8 (10) \times 3-6 \mu$; rhizoids present. A fungus, apparently this species, was isolated by Willard Allen from grasshoppers.
- Sporodinia grandis* Link. Collected on *Clavaria pistillaris*, *Paxillus involutus*, *Hygrophorus pudorinus* and species of *Entoloma*, *Lentinus*, *Russula* and *Lactarius*; throughout Manitoba; on *Boletus* in Saskatchewan.
- Syncephalastrum racemosum* Cohn. Twelve isolations from soil from a wheat field; Univ.
- Syncephalis cordata* van Tiegh. & Le Mon. Following Mucorales on rabbit dung collected near Beausejour and cultured three to four weeks in a damp chamber. Basal cell V-shaped, giving rise to two columns of spores; spores $6-8 \times 3-4 \mu$; rather small for *S. cordata*, but otherwise the fungus fits that species.
- *nodosa* van Tiegh. Parasitic on *Pilobolus*; Univ. Described and illustrated by Buller (82, vol VI).
- Thamnidium elegans* Link. An occasional coprophilous fungus; Univ. Lateral branches of sporangiophore dichotomously branched.
- *Fresenii* (van Tiegh. & Mon.) Schroet. On an old wasp's nest, Univ. Lateral branches of conidiophore verticillately branched, spores $8-10 \times 4-6 \mu$.
- Zygorhynchus heterogamus* Vuill. Rare in Manitoba soil.
- *Moelleri* Auct. Amer., non Vuill. Isolated once from forest soil. Zygospores $30-55 \mu$, spores from sporangia $4-5 \times 2-3 \mu$.
- *Vuilleminii* Namysl. Occasional in soil.

ENTOMOPHTHORALES

- Empusa americana* Thaxt. Found twice on dead flies in the woods, Univ. Conidia $21-28 \times 15-18 \mu$, resting spores $36-54 \mu$.
- *Aphidis* Hoffm. Rarely found on Aphididae; Univ.
- *Grylli* (Fres.) Nowak. Plays a part in decimating grasshoppers throughout the Prairie Provinces. Dr. R. F. Bird, Entomologist in charge of the Entomological Laboratory at Brandon, reports as follows: grasshoppers highly susceptible: *Camnula pellucida* (Scud.), *Melanoplus bivittatus* Say, and *Gomphocerus clavatus* Thom. Species in which occasional individuals have been found affected: *Dissoteira carolina* (L.), *Melanoplus infantalis* Scud., *M. packardi* Scud., *M. mexicanus* Sauss., *Spharagemon collare* (Scud.), and *Trachyrachis kiowa* (Thom.). This fungus becomes common when the grasshoppers are at their maximum prevalence (as in 1923 and 1934) and then may assume epidemic proportions when a damp summer comes upon the abundant grasshoppers (as in 1935). A cycle of about eleven years is expected for the rise and decline of these insects, and therefore of the fungus. Also found on *Ctenucha virginica*; Treesbank, Man.
- *Muscae* (Fr.) Cohn. Can be found each autumn on *Musca domestica* in Man. and Sask.
- *virescens* Thax. On dead cutworms, which had climbed up herbs before dying; Univ.
- Tarichium megaspermum* Cohn. Also on cutworms, and possibly only a stage of the preceding; Univ.

ASCOMYCETES

PLECTASCALES

- Arachniotus citrinus* Masee & Salm. On dung of rabbit; Dana, Sask.; det. R. F. Cain.
- Eurotium herbariorum* (Wigg.) Link, the perfect stage of *Aspergillus herbariorum* of the *A. glaucus* group. The perithecia are commonly found on imperfectly dried herbarium specimens, stale bread and other organic material in Man. and Sask.
- *pulcherrimum* Wint. On bird droppings; Rosser, Univ. Perithecia 100–200 μ , with membranous wall; asci nearly spherical, 12–16 μ , 8-spored; spores c. 5–6 \times 4 μ . Thom states that *E. pulcherrimum* is to be excluded from the *Eurotium* stage of *Aspergillus*.
- ?*Cymnoascus Reessii* Baran. On dung, old wasp's nest, and in soil; Univ. Perithecia orange; spores 3–4 \times 2–4 μ . This is probably an *Arachniotus*.
- Monascus purpureus* Went. On silage made from *Zea Mays*; Brandon, Univ. A bright rose color is produced. The fungus was isolated by N. James and studied in culture. No cases of poisoning of livestock by moldy corn silage have come to the writer's attention: but see *Scopulariopsis brevicaulis*.
- Onygena corvina* Alb. & Schw. On feathers; Minaki, Univ. Povah (13) states that apparently the first published record of this fungus in North America occurs in *The Fungi of Manitoba*. He found it at Isle Royale, Mich.
- *equina* (Willd.) Pers. Occasionally found on old horns of animals in Man.
- Saccharomyces* spp. Yeasts are very common in butter, on fruits, food materials, meat in storage, and in slime flux in wounds on trees. They have not been studied.
- Thielavia terricola* (Gilman & Abbott) Emmons. Isolated from upper stem of *Triticum aestivum* at the Rust Laboratory by W. A. F. Hagborg. The asci are evanescent, and the perithecia soon become filled with "loose" ascospores mostly 12–14 \times 7–8 μ (see Bull. Torrey Bot. Club, 57: 124).

EXOASCALES

- Taphrina Alni-incanae* (Kühn) Magn. Causes distortion of female catkins of *Alnus incana*; Victoria Beach. The infection was too old for determination of microscopic characters; the fungus may be *T. Robinsoniana* Giesenh., if that be a distinct species.
- *caerulescens* (Mont. & Desm.) Tul. Rather common on leaves of *Quercus macrocarpa* in Man.; on *Q. dentata* (cult.) at Indian Head, Sask.
- *communis* (Sadebeck) Giesenhagen. The common "pocket" of *Prunus nigra* (cult.) in Man., and at Indian Head and Rosthern, Sask., is probably caused by *T. communis*. Native *P. americana* has not been found affected. The disease can be prevented by spraying.
- *deformans* (Berk.) Tul. This species is perhaps the cause of deformation of twigs and leaves of *Prunus Besseyi* (cult.); Morden, and *P. Besseyi* \times *P. triflora*; Univ.
- *insititiae* (Sadebeck) Johans. Causing "leaf curl" of branches of *Prunus pennsylvanica*; Victoria Beach, Man., Battleford, Sask.
- *Struthiopteridis* Nishida. Causes brown discolorations on leaves of *Pteritis nodulosa*; Clear Lake.

HELVELLALES

- Cudonia circinans* (Pers.) Fr. In moss under conifers; Victoria Beach and Minaki, abundant at Clear Lake. Spores 40–50 \times 3–4 μ .
- Geoglossum ?ophioglossoides* (L.) Sacc. One specimen in sandy woods of *Pinus Banksiana*; eastern Man. Fruit body black, 40 mm. high, smooth, rather elastic; stalk 2 mm. wide; spores 54–68 \times 6–7 μ , rather consistently 8-celled when mature.
- Gyromitra esculenta* (Pers.) Fr. Victoria Beach and Lake of the Woods; late May. Sometimes abundant. No cases of poisoning from eating this fungus known in Man., but Dr. Dearnness reports two fatal cases in Ontario. Seaver regards this fungus as only a gypose form of *Helvella infula*.
- Helvella crispa* (Scop.) Fr. Rather common in autumn; Univ. and Lake Winnipeg eastward in Man., Prince Albert National Park, Sask. Spores 18–20 \times 12 μ .
- *elastica* Bull. In woods, Clear Lake, Victoria Beach, Kenora; Aug.–Sept. 18–20 \times 11–13 μ .
- *infula* Schaef. On the ground or on rotten wood; Clear Lake, Victoria Beach, Minaki; it has been found only in Aug. and Sept., whereas *Gyromitra esculenta* has been found only in spring. 20–22 \times 8–10 μ .

- Helvella mitra* L. (*H. lacunosa* Afz.) Rather common in woods across southern Man.; July-Sept. 15-20 \times 10-12 μ .
- *sphaerospora* Peck. This species, not commonly found elsewhere, has been seen several times at and near Victoria Beach in late June, on old wood. Easily identified by its spherical spores, about 10 μ in diameter.
- Leotia lubrica* (Scop.) Pers. In coniferous woods; Kenora; Sept.-Oct.
- *lubrica* form *Lloydii* (Rehm) Durand. The green form has been collected at Minaki; Sept.
- Mitruia irregularis* (Peck) Durand. Rather common; Clear Lake, Victoria Beach eastward; Aug.-Sept. 6-8 \times 4 μ .
- Morchella angusticeps* Peck. Univ. to Lake Winnipeg; April 14 (earliest collection) to the end of May. Pileus acute at apex, rather small, pits dark at margins; spores up to 28 μ long.
- *conica* Pers. In woods of Populus, etc., in Man. and Sask. Perhaps only a form of *M. esculenta*. See Buller (82, vol. VI: 314).
- *crassipes* (Ventenat) Pers. Univ. north and eastward, June. Spores c. 17-20 \times 11-13 μ .
- *deliciosa* Fr. Univ. to Victoria Beach, Man., Humboldt, Sask. Small plants; spores 19-22 \times 10-13 μ . Late May and early June.
- *esculenta* (L.) Pers. Across southern Man.; in woods in early June.
- Spathularia clavata* (Schaeff.) Sacc. In bogs and low woods in coniferous areas; Norway House and eastern Man.; Aug.-Sept. 50-80 \times 2-4 μ .
- Trichoglossum tetrasporum* Sinden & Fitzpatrick. In the edge of a bog; Rabbit Lake, Kenora; Sept. 25, 1932; coll. M. Timonin. Plants black, setose, fertile portion short; asci 4-spored; spores 111-141 \times 6-7 μ , 16-celled. Described from a collection in New York.
- Underwoodia columnaris* Peck. This interesting and striking fungus was recorded (Fung of Man., p. 58) from three collections made in 1927 and 1928 in July and Aug. 1st. Several specimens were found on July 10-11, 1932 in the same deciduous wood, Univ., reaching a size of 9 \times 2 inches. The taste is mild. This species has been studied by Miss Nusslé (Mycologia, 28: 236).
- Verpa bohemica* (Krombh.) Schroet. Common in deciduous woods at Univ.; last half May 1927, 1932; found to be excellent when cooked; also at Victoria Beach; Edmonton, Alta.; Saskatoon, Sask. Asci with two spores each 60 μ or more long. See Buller (82, vol. VI: 324).
- *conica* (Muell.) Swartz. Occasional in late May; Univ., Victoria Beach and eastern Man.

PEZIZALES

1. *Operculatae*

- Aleuria aurantia* (Pers.) Fuckel. On the ground; Univ., Ingolf, Minaki; Aug.-Oct. An orange cup-fungus with rough spores 20-24 \times 10 μ .
- Aleurina atrovina* (Cooke) Seaver. Univ., Victoria Beach; July.
- Ascobolus carbonarius* Karst. On burnt places in woods; Univ., Winnipeg; Aug.-Sept. 20-25 \times 12-13 μ .
- *geophilus* Seaver. On damp soil; Univ.; July. 20-25 \times 11-14 μ .
- *glaber* Pers. On horse dung; Univ.; April. Apothecia $\frac{1}{4}$ - $\frac{3}{4}$ mm. wide; spores varied in size in different apothecia, 17-26 \times 9-13 μ .
- *immersus* Pers. Univ. and Hamiota. A common coprophilous fungus with large purple spores 55-65 \times 30-35 μ , sometimes found attached to herbage in the field.
- *stercorarius* (Bull.) Schroet. Also a common coprophilous fungus throughout Manitoba. Spores mostly 20-28 \times 9-14 μ . See Buller (82, vol. VI), and Miss Dowding (120).
- *striisporus* (Ell. & Dearness) Seaver. Type collected at London, Ont.; fairly common at the Univ. of Man. in a small slough as it dries up in spring or summer, on damp leaves of various kinds. Spores striate, purple, 15-20 \times 9-10 μ .
- *viridulans* Phill & Plowr. On rabbit pellets; Univ. Apothecia distinctly green when young or mature, $\frac{1}{2}$ mm. or less wide, exterior coarsely furfuraceous; spores 12-14 \times 7-8 μ , with distinct longitudinal ridges. Seaver records it only from New York and Europe.
- Ascophanus argenteus* (Currey) Boud. On cow dung; Univ., Birds Hill. Apothecia silvery-white, very small; spores 10-12 \times 6-7 μ .
- *carneus* (Pers.) Boud. A common coprophilous fungus in Man. Spores 17-23 \times 10-13 μ ; apothecia pale flesh-color to reddish.
- *gallinaceus* (Peck) Seaver. On partridge droppings; Berens River, Univ. Apothecia to 2 mm. wide, somewhat stalked, pale yellow-pinkish, more brownish at margin; hymenium

- concolorous; asci mostly $120 \times 10 \mu$, but widening to 16μ before spore discharge; spores $8-12 \times 5-8 \mu$. A similar small yellowish *Ascophanus* has been collected on horse dung, with the asci mostly 4-spored.
- Ascophanus glaucellus*** Rehm. On rabbit dung; Univ. Apothecia about $\frac{1}{2}$ mm., milky-white; asci c. $60 \times 13 \mu$; paraphyses 2μ at apex; spores mostly $8 \times 5 \mu$.
- ***granulatus*** (Bull.) Speg. Not uncommon on dung of horse and cow in Man. Spores $17-19 \times 9-10 \mu$, sometimes shorter.
- ***lacteus*** (Cooke & Phill.) Sacc. Occasional on old dung; Univ. Spores $8-13 \times 5-8 \mu$.
- ***ochraceus*** (Crouan) Boud. On dung of deer and horse; Beausejour, Berens River, Clear Lake. Apothecia yellowish or brownish, about 1 mm. wide; spores $15-21 \times 8-10 \mu$.
- Bulgaria melastoma*** (Sowerby) Seaver. Three collections on old wood; Victoria Beach; July-Aug.
- Discina ancilis*** (Pers.) Sacc. On mossy wood; Victoria Beach, Lac du Bonnet; June. Spores apiculate, $27-35 \times 11-14 \mu$.
- Durandiomyces Phillipsii*** (Masse) Seaver. This "cabbage-head fungus" was found growing from rotted wood in an old mushroom cellar near the Univ., Oct. 1934. Pileus contorted, white with a trace of pinkish-yellow when fresh, brittle; spores rough, $10-12 \times 5-6 \mu$.
- Geopyxis bronca*** (Peck) Seaver. On much decayed wood; Victoria Beach; July. Yellow apothecia; spores $18-20 \times 12 \mu$; det. F. J. Seaver. Recorded previously only from New York and Europe.
- ***cupularis*** (L.) Sacc. On charcoal heaps in coniferous woods; Kenora, common at Clear Lake.
- Humarina aggregata*** (Berk. & Broome) Seaver. Under Picea; Vivian; May; det. F. J. Seaver. Apothecia orange; spores $19-20 \times 9-10 \mu$.
- ***araneosa*** (Bull.) Seaver. On burnt sandy soil; Keewatin; June. Spores $12-16 \times 8-9 \mu$.
- ***leucoloma*** (Hedw.) Seaver. Amongst mosses; Clear Lake, Minaki; Aug-Sept. $20-22 \times 12-15 \mu$.
- ***semi-immersa*** (Karst.) Seaver. On damp soil in ravines; Univ.; July-Aug.; det. F. J. Seaver. Cups pale tan, 3-7 mm. wide; spores $14-16 \times 10 \mu$.
- ***testacea*** (Moug.) Seaver. On old roots and stems of Medicago; Univ. Spores $15-19 \times 10-11 \mu$.
- ***trachyderma*** (Ell. & Ev.) Seaver. On decayed Populus; Univ.; May; det. F. J. Seaver. Cups vinaceous-brown; paraphyses; $8-10 \mu$ wide at tips; spores $20-24 \times 10-12 \mu$.
- Lamprospora Constellatio*** (Berk. & Broome) Seaver. These bright red apothecia are fairly common on damp soil in woods; Victoria Beach, Univ.; June-Aug. Spores $12-18 \mu$ in diameter.
- ***?laetirubra*** (Cooke) Lagarde. On sandy soil; Victoria Beach. Spores $12-15 \mu$.
- ***wisconsinensis*** Seaver. On burnt moss in a bog near Rennie; Aug. Apothecia orange on drying; spores small, $7-8 \mu$.
- Lasiobolus equinus*** (Muell.) Karst. Occasional on dung of horse, deer, etc.; Clear Lake, Univ. $20-24 \times 12-13 \mu$.
- Melastiza Charteri*** (W. G. Smith) Boud. (*M. miniata* Boud.). Common on sawdust in an emptied ice-house in autumn; Univ. Bright red cups with hairs on exterior; spores up to $22 \times 11 \mu$. See Buller (82, vol. VI).
- Patella abundans*** (Karst.) Seaver. On burnt places in mixed woods; Clear Lake; Sept. Cups whitish with pale brown pointed hairs; spores c. $16 \times 8 \mu$.
- ***albida*** (Schaeff.) Seaver (*Lachnea hemispherica* (Weber) Gill.) Common on the ground and old wood; Univ. to Berens River and eastward; July-Sept.
- ***albocincta*** (Berk. & Curt.) Seaver. Amongst moss; Kenora. Spores rough, c. $24 \times 13 \mu$.
- ***albospadicea*** (Grev.) Seaver. On fallen leaves of deciduous trees; Univ.; Sept. Apothecia 3-5 mm., whitish, clothed with brownish hairs; spores smooth, $14-16 \times 9-10 \mu$.
- ***coprinaria*** (Cooke) Seaver. Not uncommon on old cow dung; Univ., Victoria Beach. Apothecia peach-yellow, clothed with long hairs; spores $14-19 \times 7-10 \mu$.
- ***fimetaria*** Seaver. On cow dung in woods; Birds Hill; July 6, 1935; I. L. Connors and G. R. Bisby. Apothecia reddish, with hairs up to 1 mm. long, forked at base; paraphyses to 8μ wide at apex; spores $18-21 \times 10-12 \mu$, distinctly rough. Evidently *P. fimetaria*, previously known only from the type locality in New York State.
- ***melaloma*** (Alb. & Schw.) Seaver. Common along the Red River on burnt soil, June to Oct. $16-20 \times 8-10 \mu$.

- Patella setosa* (Nees) Seaver. On decayed wood of *Populus*; Univ.; July; det. F. J. Seaver.
- *scutellata* (L.) Morg. (*Lachnea scutellata* (L.) Gill.) Common on old wood and debris across Man., to Norway House, and to Saskatoon and Lake Waskesiu, Sask. See Buller (82, vol. VI).
- *stercorea* (Pers.) Weber. Common on cow dung across Man.; rarely seen on horse dung; found on moose dung at Clear Lake with smaller spores, $14-17 \times 7-10 \mu$.
- *theleboloides* (Alb. & Schw.) Seaver. Common in an ice-house after being emptied, on sawdust and debris; Univ. Apothecia yellow; spores $14-17 \times 8-9 \mu$; up to $23 \times 10 \mu$ in one collection. See Buller (82 vol. VI, as *Cheilymenia vinacea*).
- Paxina acetabulum* (L.) O. Kuntze. Occasional on ground in frondose woods; Univ.; July. $16-20 \times 12-14 \mu$.
- *corium* (Weberb.) Seaver. On the ground; Victoria Beach, Man.; Saskatoon, Sask. Cups blackish; spores $15-19 \times 9-11 \mu$.
- *hispida* (Schaeff.) Seaver. On the ground or on rotted wood of *Betula*, etc.; Victoria Beach, Berens River; July-Aug. $20-25 \times 10-13 \mu$.
- *macropus* (Clements) Seaver. In frondose woods; Univ.; June. Stem to 5×1 cm., lacunose; apothecia to 6 cm. wide; spores $c. 20 \times 13 \mu$.
- *?subclavipes* (Phill. & Ell.) Seaver. In deep mixed woods; Victoria Beach; Aug. Stem 1 cm. long; cup small; spores $18-22 \times 10-12 \mu$.
- *sulcata* (Pers.) Kuntze. Occasional on the ground in woods; Birds Hill, Univ., Victoria Beach; June-July. $16-20 \times 11-14 \mu$.
- Perrotia flammea* (Alb. & Schw.) Boud. (*Lachnella flammea* Fr.). On old wood; Victoria Beach; June. Apothecia lemon-yellow inside, clothed with brick-red hairs outside; asci $c. 100 \times 10-12 \mu$; paraphyses filiform; spores $18-26 \times 3\frac{1}{2}-4 \mu$, becoming septate.
- Peziza badia* Pers. Common in woods; Univ. to Victoria Beach and eastward; June-Sept. $16-20 \times 8-10 \mu$. See Buller (82, vol. VI: 304).
- *domiciliana* Cooke. In a cellar; Univ. $15-16 \times 9-10 \mu$.
- *fimenti* (Fuckel) Seaver. On old cow dung; Univ.; June. Apothecia about 1 cm. wide; spores $12-14 \times 6-7 \mu$.
- *pustulata* (Hedw.) Pers. On burned areas; Victoria Beach, Winnipeg; Aug.-Sept. Spores variable, rough, $12-18 \times 6-10 \mu$.
- *repanda* Pers. Common on rotted logs, sawdust, etc.; Univ., Victoria Beach eastward. Spores mostly $14-16 \times 8-10 \mu$, sometimes longer.
- *sylvestris* (Boud.) Sacc. & Trott. Univ., Victoria Beach, west to Clear Lake, Man., and Lake Waskesiu, Sask.
- *vesiculosa* Bull. Common on dung, mushroom beds, or rich soil; Kenora to Norway House and Univ.; June-Aug. Discussed and illustrated by Buller (82, vol. I, referred to as *P. repanda*; also vol. VI).
- *violacea* Pers. On charcoal, etc.; Clear Lake, Univ.; June-Sept.
- Plectania coccinea* (Scop.) Fuckel. The only record of the Scarlet-cup is a specimen sent from near Neche, North Dakota, on Mar. 27, 1927. Since it apparently was collected only about a half mile from the Manitoba boundary, it may reach southern Man. $28-38 \times 10-14 \mu$.
- *hiemalis* (Nees & Bernst.) Seaver (*Sarcoscypha protracta* (Fr.) Sacc.). Not uncommon in deciduous or mixed woods across southern Manitoba; late April to early June. Discussed and illustrated by Buller (82, vol VI). Spores $40-46 \times 16-22 \mu$.
- Pseudoplectania fulgens* (Pers.) Fuckel. Rather common on moss and rotted wood in coniferous woods; Victoria Beach; late May or early June. Apothecia reddish peach-color, up to 4 cm. wide; spores spherical, $6-9 \mu$.
- *nigrella* (Pers.) Fuckel. One collection on old mossy wood; Victoria Beach; late May. Cups blackish outside, bay-brown inside, $8-17$ mm. wide; spores $10-12 \mu$.
- *vogesiacae* (Pers.) Seaver. Three collections on decayed wood; Victoria Beach; May or early June. Cups blackish, to 25 mm. wide, stipitate; spores $10-12 \mu$. It is noteworthy that all known North American species of *Pseudoplectania* may be collected at Victoria Beach in May. Other coniferous areas have not been visited so early.
- Psilopezia nummularia* Berk. On wet leaves; Univ. Apothecia brown, adhering to substratum; spores smooth, $20-22 \times 11-12 \mu$.

- Pyronema canina** Dearness & Bisby (71:60). On dung of dog; Norway House; 1928. No more of this fungus has been found, and nothing can be added to the previous report. Spores $11-12\frac{1}{2} \times 6-7 \mu$.
- **omphalodes** (Bull.) Fuckel (*P. confluens* (Pers.) Tul.). Common in damp weather on charcoal beds and burned soil; rather troublesome in greenhouses on pots of sterilized soil; Man. and Sask. Discussed and illustrated by Buller (82, vols. V, VI).
- Rhizina inflata** (Schaeff.) Karst. Rare, under Pinus in autumn; Victoria Beach, Kenora. See Buller (82, vol. VI: 340).
- Rhyarobius crustaceus** (Fuckel) Rehm. Occasional on rabbit dung in damp chambers; Univ. Asci $120-150 \times 22-30 \mu$, spores $8-10 \times 5-6 \mu$. Many spores (apparently about 128) in an ascus; but otherwise the fungus agrees with *R. crustaceus*, which is recorded as having about 64 spores per ascus. Only about a half-dozen asci in each minute apothecium.
- **monascus** Mouton. On dung of goat and rabbit; Univ. Apothecium about 150μ wide, pale brownish, glabrous; one ascus present, $c 120 \times 50 \mu$, containing more than a hundred spores; spores $5-6 \times 3-4 \mu$. Perhaps a better name is *Thelebolus monascus* (Mouton) Boud.
- **?polysporus** (Karst.) Sacc. On old dung in damp chamber; Univ. Apothecia $70-90 \mu$ wide, yellow-hyaline, with 3 to 6 asci; asci rather small, about $36 \times 18 \mu$; spores subspherical, about 3μ in diameter, many in each ascus. Probably near *R. polysporus*, but all sizes rather small.
- **sexdecimsporus** (Crouan) Phill. On dung of rabbit; Prud'homme, Sask.; det. R. F. Cain.
- Saccobolus depauperatus** (Berk. & Broome) Phill. On dung of horse and deer; Berens River, Clear Lake, Univ. The discharged purple spores are $12-14 \times 6 \mu$, and cling together in a mass $30-35 \times 10-12 \mu$.
- **globuliferellus** Seaver. On rabbit dung; Prud'homme, Sask.; det. R. F. Cain. Seaver (14) records it only from New York City.
- Scodellina grandis** (Pers.) Seaver. On damp soil in mixed woods; Victoria Beach; Sept. Spores slightly rough, $16-18 \times 8-10 \mu$.
- **leporina** (Batsch) S. F. Gray. Common on soil in woods; Clear Lake, Univ., Victoria Beach eastward. Spores vary somewhat in size in different collections; range $10-16 \times 6-9 \mu$. One collection (perhaps form *minor* Rehm) had spores $8-10 \times 6 \mu$.
- Sepultaria ?aurantia** Clements. In mossy soil in a plantation of conifers near Morris, Man.; July. Apothecia sunken in soil, 1-2 cm. wide, externally densely hairy; hymenium pale yellow; spores $18-23 \times 12-13 \mu$. A similar or identical species found at Ingolf.
- Thelebolus Zukalii** Heimerl. On dung of deer; Clear Lake, Man.; det. R. F. Cain.
- Urnula Craterium** (Schw.) Fr. Rather common in May and early June in deciduous woods; Univ. to Victoria Beach and eastward. Spores $24-40 \times 11-13 \mu$. See Buller (82, vol. VI: 308).
2. *Inoperculatae*
- Arachnopeziza aurelia** (Pers.) Fuckel. On old wood of *Betula alba* var. *papyrifera*; Victoria Beach; May. Apothecia to 2 mm. wide, golden-yellow with a fringe of orange hairs; asci $c. 100 \times 10 \mu$; spores straight or allantoid, $20-24 \times 4 \mu$, becoming one-septate.
- **?delicatula** Fuckel. On deciduous wood; Univ.; July. Cups small, hyaline becoming pale yellowish, with a fringe of delicate hairs; spores $32-44 \times 3\frac{1}{2}-4 \mu$.
- Ascocalyx Abietis** Naumov. On twigs of *Abies balsamea*; Victoria Beach; the conidial stage *Bothrodiscus pinicola* at Berens River; verified by H. S. Jackson. See Mycologia, 28: 451.
- Calicium polyporeum** Nyl. On *Polyporus pargamensis* and *Daedalea confragosa*; Norway House and Univ. Certain species of *Calicium* are placed in the Lichens, but *C. polyporeum* is a fungus, according to Fink.
- **pusillum** (Achar.) Floerke. On coniferous wood; Norway House; on stump of *Fraxinus pennsylvanica* and fallen fruits of *Quercus macrocarpa*; Univ. Spores brown, $6-10 \times 2-4 \mu$, two-celled.
- Calloria fusarioides** (Berk.) Fr. On old stems of *Laportea canadensis*; Selkirk; June. Apothecia irregular, bright orange-red; spores two-celled, $10-14 \times 4 \mu$. The conidial stage *Cylindrocolla Urticae* also was present.
- Catinella nigro-olivacea** (Currey) Boud. On old wood of Populus; Univ.; on old conifer; Victoria Beach. Apothecia 3-10 mm., dark green outside, olive black inside; spores greenish, $8-10 \times 3-4 \mu$.

- Cenangium furfuraceum** (Roth) de Not. Very common on dead branches of *Corylus*; Univ. and probably elsewhere. The apothecia have been found open in early July. Spores about $8 \times 2\frac{1}{2} \mu$.
- **populneum** (Pers.) Rehm. Common on wood and bark of dead *Populus*; rare on branches of *Fraxinus pennsylvanica*; Manitoba, and Prince Albert, Sask. $10-16 \times 3-4 \mu$.
- **populneum** var. **prunicola** Rehm (as in Brenckle, *Fungi Dakotenses*, 209). On *Prunus virginiana*; Univ.
- Chlorosplenium aeruginascens** (Nyl.) Karst. On *Fraxinus pennsylvanica*, *Populus*, etc.; across southern Manitoba. Spores small, $6-8 \times 2 \mu$. More commonly collected than the next; differs only in spore size; no intergrading sizes have been found. Seaver (*Mycologia*, 28: 391), however, places the two species together under his new genus *Chlorociboria*.
- **aeruginosum** (Oed.) de Not. On *Salix*, etc.; Univ. northward and eastward. Spores $10-13 \times 2-3 \mu$.
- **versiforme** (Pers.) de Not. On coniferous wood; Victoria Beach. Cups green, to $2\frac{1}{2}$ cm. broad; spores $12-15 \times 3-4 \mu$.
- Ciboria amentacea** (Balb.) Fuckel, or a variety. On male catkins of *Alnus incana*; roadside through muskeg near Vivian; April 25, 1934; H. H. Whetzel and G. R. Bisby. Perhaps this species on fallen *Salix* catkins; Gimli.
- **caucus** (Rebent. ex Pers.) Fuckel. On fallen male catkins of *Populus tremuloides*; Univ., Victoria Beach; late April or early May, sometimes before the last snow has melted in the woods. The catkins of the previous year produce stalked apothecia; spores $9-12 \times 4-6 \mu$. First found in Man. May 1, 1932 by T. H. Harrison of Australia; then in late April 1933, and collected with H. H. Whetzel in the spring of 1934; common for a few days only, each spring.
- **luteovirescens** (Rob.) Sacc. On more or less buried twigs of deciduous woody plants; Univ.; July. Apothecia greenish-yellow, 1-5 mm. wide; stem 1-5 cm. $\times \frac{1}{4}-1$ mm., dark below, concolor above; asci c. $100 \times 10 \mu$; spores hyaline, c. $12-13 \times 5-5\frac{1}{2} \mu$.
- **rufofusca** (Weberb.) Sacc. On carpels of old cones of *Picea* sp.; Indian Bay, S. E. Man. Apothecia solitary, long stalked; spores $5\frac{1}{2}-8 \times 2\frac{1}{2}-3\frac{1}{2} \mu$.
- sp. On fallen male catkins of *Betula alba* var. *papyrifera*; Victoria Beach and Indian Bay. Common in early May only. Illustrated, with notes, by Buller (82, vol. V: 141). Prof. Whetzel plans to name this fungus.
- Coryne sarcoides** (Jacq.) Tul. On old wood of *Populus*, etc.; Univ. eastward. Apothecia purple; spores $18-22 \times 4-5 \mu$, becoming septate.
- **sarcoides** var. **urnalis** (Nyl.) Karst. On *Populus*, etc.; Univ., Kenora. Like the preceding except that the spores are larger, $22-30 \times 5-6 \mu$.
- Dasyascypha Agassizii** (Berk. & Curt.) Sacc. Common on branches of *Abies balsamea*; Victoria Beach eastward. Hymenium orange; spores c. $5-7 \times 2 \mu$.
- **arida** (Phill.) Sacc. On fallen branches of *Picea*; Berens River. Cups dark-brown, setose; spores oval, $5-7 \times 3-4 \mu$.
- **Carestiana** (Rabenh.) Sacc. On old fronds of *Pteritis nodulosa*; Univ.; May-June. Apothecia small, white; spores $9 \times 2 \mu$ or larger.
- **?cerina** (Pers.) Fuckel. On twigs of *Quercus macrocarpa*; Univ. Apothecia pale brick-red, but immature.
- **?dryina** (Karst.) Sacc. On old deciduous wood; Matlock. Cups pale yellow; spores $6-8 \times 1\frac{1}{2}-2 \mu$.
- **nivea** (Hedw. f.) Sacc. On deciduous wood; Univ.; det. F. J. Seaver.
- **Pini** Brunch. On twigs of *Pinus Banksiana*; Victoria Beach. Spores $15-19 \times 4-6 \mu$.
- **pygmaea** (Fr.) Sacc. On exposed roots of frondose tree or shrub; Victoria Beach.
- **?sporotricha** (Oud.) Rehm. On decaying stems of *Helianthus annuus*; Univ. Cups very small, white; spores $7-10 \times 1\frac{1}{2} \mu$.
- **sulfurea** (Pers.) On old herbaceous stems of *Aster*, etc.; Univ.; April-May. Apothecia grayish, with hairy, lemon-yellow margin; paraphyses pointed; spores $8-14 \times 2 \mu$. Det. Seaver. This is (presumably) *Peziza sulfurea* Pers.; a *Dasyascypha* combination was not found.
- Dermatea ?Cerasi** (Pers.) de Not. On old wood, probably of *Prunus*; Kenora. See *Micropera drupacearum*.

- Dermatea Rubi** (Lib.) Rehm. On *Cornus stolonifera*; Univ.; Sept. Apothecia brown; spores $29-38 \times 9-12 \mu$, larger than described for this species.
- Desmazierella echinata** Dearness. On old wood of ?*Populus*; Univ.
- Fabraea Ranunculi** (Fr.) Karst. (*Pseudopeziza singularia* (Peck) J. J. Davis). On *Ranunculus pennsylvanicus*; eastern Man. Ascospores $14-20 \times 4 \mu$, becoming septate into one small cell and one large.
- Geopyxis nebulosa** (Cooke) Sacc. (a species of *Ciboria*). On old deciduous wood; Matlock. Cups whitish, 5-15 mm. wide, stalked; spores $28-34 \times 6 \mu$.
- Godronia urceolus** (Alb. & Schw.) Karst. On dead twigs of *Ribes* sp.; Univ.; June. Apothecia urceolate, olive green then blackish; spores $60-70 \times 2-3 \mu$. (See Mycologia, 26: 266, 1934.)
- Helotium ?albidum** (Rob.) Pat. On fallen, more or less skeletonized leaves of *Ulmus americana* and *Quercus macrocarpa*; Univ. Apothecia small, pure white, stalked; spores $c. 15 \times 4 \mu$.
- **amenti** (Batsch) Fuckel (*Phialea amenti* Quél). On fallen male catkins of *Salix* sp.; Univ., Vivian; April; det. H. H. Whetzel. Possibly this species found also on fallen catkins of *Populus*.
- **citrinum** (Hedw.) Fr. Common on old *Betula*, *Populus*, etc.; throughout Manitoba.
- **epiphyllum** (Pers.) Fr. On fallen leaves of *Populus*, etc.; Minaki, Univ. Apothecia tan-colored, to 3 mm. wide; spores $16-20 \times 4-5 \mu$.
- **fructigenum** (Bull.) Karst. On fallen acorns of *Quercus macrocarpa*; Univ. Small white apothecia on long stalks; spores $14-18 \times 4 \mu$.
- **?phyllophilum** (Desm.) Karst. On fallen leaves; Univ. Spores $c. 10 \times 4 \mu$.
- **renisporum** (Ell. in Cooke) or near. On fallen leaves of *Ulmus americana*; Univ.
- **salicellum** Fr. On twigs of *Salix*; Univ. Apothecia yellowish, about 1 mm. wide, with a short stalk; spores spindle-shaped, $20-24 \times 6 \mu$, with two guttulae.
- **sulphuratum** Phill. On fallen needles of *Picea*; Birds Hill, Clear Lake, Vivian. Apothecia yellow, stalked, 1-4 mm. wide; spores $10-12 \times 4-6 \mu$; this and the next det. with some doubt by F. J. Seaver.
- **virgultorum** (Vahl) Karst. On old *Populus*; Keewatin.
- Hysteropatella elliptica** (Fr.) Rehm. On wood of *Salix*; Univ. Spores $20-25 \times 7-8 \mu$, brown, 3-septate; this size is that of Fuckel, not Rehm (see Rabenhorst Kryptogamenflora).
- **Prostii** (Duby) Rehm. On bark and wood of *Ulmus* and other deciduous trees. Birds Hill, Univ. Spores $12-16 \times 5-6 \mu$, light brown, 3-septate.
- Karschia deformata** Peck. On dead twigs of *Juniperus horizontalis*; Beaver Creek, Sask.
- **lignyota** (Fr.) Sacc. Common on dead *Amelanchier alnifolia* along the Red River. Apothecia blackish; spores $10-14 \times 2-3 \mu$. Identification tentative.
- Lachnella corticalis** (Pers.) Fr. Common across Manitoba on bark of *Populus*. Spores $19-30 \times 3-4 \mu$.
- **?papillaris** (Bull.) Karst. On deciduous wood; Stony Mountain. Spores $10-12 \times 4 \mu$, hyaline, 1-septate.
- Lachnum bicolor** (Bull.) Karst. On twigs of *Ribes*, bark of *Betula*, etc.; Univ. and Victoria Beach. $6-10 \times 1\frac{1}{2}-2 \mu$.
- **?virgineum** (Batsch) Karst. On fallen bud scales of *Populus balsamifera*; Univ. Cups small, pure white. Common in early May.
- Leciographa ?franconia** Rehm. On old wood of *Betula*; Gimli. Apothecia 0.2-0.5 mm. wide; spores $10-12 \times 4 \mu$, brown, 3-septate.
- Mollisia arundinacea** (DC.) Phill. On old stems of *Phragmites communis*; Lake Dauphin; July. Apothecia pale; spores $8-13 \times 2-2\frac{1}{2} \mu$. Probably this species also on old grass; Univ.
- **?atrocinerea** (Cooke) Phill. On old stems of *Cirsium arvense* and *Mentha* sp.; Univ. $8-10 \times 2 \mu$.
- **caesia** (Fuckel) Sacc. Rather common on old stems of *Symphoricarpos*; Univ. Cups gray; spores $9-12 \times 2-3 \mu$. Det. J. F. Brenckle, who has studied this species in North Dakota (see Fungi Dakotenses, 533).
- **chionea** Massee & Crossl. On old deciduous wood; Univ.; det. F. J. Seaver as var. **macrospora**.
- **cinerea** (Batsch) Karst. Very common on old wood of *Acer*, *Fraxinus*, *Populus*, *Salix*, *Ulmus americana*, etc.; Univ. eastward. Apothecia steel-blue to tan or whitish; spores $8-12 \times 2-3 \mu$.

- Mollisia Dehnii** (Rabenh.) Karst. Not uncommon on *Potentilla monspeliensis*, Berens River south-westward in Man. and at Meota, Sask.; one collection on *P. bipinnatifida*; Carberry, Man. The dark apothecia arise abundantly on affected stems, petioles, leaf-veins, etc.; evidently from a systemic mycelium; the plants are stunted, but withstand the attack remarkably well. Spores $11-16 \times c. 3 \mu$.
- **melaleuca** (Fr.) Sacc. On decayed wood; Kenora; det. F. J. Seaver.
- **?rufula** Sacc. On old grass; Brandon. Apothecia minute, brownish; spores $c. 6 \times 2 \mu$.
- Orbilina chrysocoma** (Bull.) Sacc. On dead *Tilia americana*; Univ.; det. F. J. Seaver.
- **?coccinella** (Sommerf.) Karst. On old deciduous wood; Univ.; Nov. Apothecia watery pink; spores $5-7 \times 3-3\frac{1}{2} \mu$.
- **?xanthostigma** Fr. On decaying Populus; Univ. Apothecia small, lemon-yellow; asci $c. 35 \times 6 \mu$; spores $5-6 \times 1-1\frac{1}{2} \mu$. Species of *Orbilina* are not uncommon in Manitoba, but it is not yet possible to place them definitely.
- Patellaria strata** (Hedw.) Fr. Rather common on old *Fraxinus pennsylvanica*, Populus, and other deciduous wood (sometimes on worked wood, e.g., an old spade-handle); Univ. Cups olive-black; spores $40-62 \times 8-11 \mu$, 8-celled or more, each cell with an oil drop.
- **clavispora** Berk. & Broome. On old *Cornus stolonifera*; Univ. Spores $30-40 \times 7 \mu$; otherwise resembling *P. atrata*.
- Patellea sanguinea** (Pers.) Rehm. On old wood of *Quercus macrocarpa*, etc.; Univ., Victoria Beach. Apothecia red with greenish epithecium; spores $8-10 \times 3 \mu$.
- Patinella ?punctiformis** Rehm. On bark of *Pinus Banksiana*; Victoria Beach. Immature, with a conidial stage apparently belonging to *Phaeodiscula*.
- Pezizella inquilina** (Karst.) Rehm. On stems of *Equisetum*; Berens River. Ascospores $c. 6 \times 1\frac{1}{2} \mu$.
- **?viridiflavescens** Rehm. On old Populus and Salix; Birds Hill, Univ. Apothecia lemon-yellow, $\frac{1}{2}-1$ mm. wide; asci $25-30 \times 4 \mu$, with 8 spores crowded at the apex; spores $4-6 \times 1-1\frac{1}{2} \mu$.
- **?xylita** (Karst.) Rehm. On old ?Salix; Univ. Apothecia reddish to yellowish. Spores $c. 8 \times 1\frac{1}{2} \mu$. Nannfeldt (11) transfers *Peziza xylita* Karst. to the genus *Cistella*, but excludes *Pezizella xylita* Rehm.
- Phialea cyathoides** (Bull.) Gill. Common on old herbaceous stems, including *Aster*, *Cirsium arvense*, *Medicago sativa*, *Melilotus* sp. and *Sonchus arvensis*; Univ. Cups white, stalked; spores $9-12 \times 2-3 \mu$.
- **scutula** (Pers.) Gill. On old Polygonum sp. and *Vitis vulpina*; Univ. and Winnipeg. Apothecia yellowish; spores $16-25 \times 4-6 \mu$.
- **vulgaris** (Fr.) Rehm. Frequent on fallen branches of Cornus, Salix, Viburnum, etc.; Univ., Victoria Beach eastward. Apothecia stalked, white; spores $7-9 \times 2 \mu$.
- Pseudopeziza Medicaginis** (Lib.) Sacc. Common on *Medicago sativa* wherever cultivated in Man. and Sask.; on *Melilotus alba* in Man.; coll. J. E. Machacek.
- **repanda** (Fr.) Karst. On *Galium triflorum*; Birds Hill, Univ. Preceded by the conidial stage *Placosphaeria punctiformis*.
- **Ribis** Klebahn. On *Ribes Grossularia*, *R. nigrum* and *R. vulgare*; Saskatoon and Indian Head, Sask.; see *Glocosporium Ribis*.
- **Trifolii** (Bernh.) Fuckel. One collection on *Trifolium pratense*; Minaki; Sept. 22, 1928; coll. I. L. Connors.
- Pyrenopeziza compressula** Rehm. On old stems of *Laportea canadensis*; Selkirk, Univ. Apothecia abundant, gray, nearly black on outside when dry; spores $8-12 \times 2 \mu$.
- **Medicaginis** Fuckel. (*Pseudopeziza Jonesii* Nannf.). Rare on *Medicago sativa*; Indian Head, Sask. and Univ., Man. Conidial stage with spores $4-7 \times 1\frac{1}{2}-2\frac{1}{2} \mu$.
- Sclerotinia Alni** Maul. On seed of *Alnus incana*; Vivian; April 25, 1934; H. H. Whetzel. Only three apothecia were found.
- **Betulae** Woron. Common in early May on fallen seeds of *Betula alba* var. *papyrifera*; Victoria Beach. Apothecia with long stalks; spores $c. 15 \times 6 \mu$.
- **?Candolleana** (Lév.) Fuckel. Sclerotia considered by H. H. Whetzel perhaps to belong to this species were found on fallen leaves of *Quercus macrocarpa*; Univ.; Sept. 20, 1935.
- **fructicola** (Wint.) Rehm (*S. americana*). Conidial stage on *Prunus nigra* (cult.) Brandon, Univ.; found in 1922, 1923, and 1925 only; injury slight; on *P. Besseyi*; Morden; on *P. melanocarpa*, Saskatoon and Tisdale, Sask.

- Sclerotinia pseudotuberosa** (Ell.) Rehm. On acorns of *Quercus macrocarpa*; Univ. Found once in the woods; can be obtained rather easily by gathering old acorns and keeping them in a moist chamber. Spores $8-9 \times 5-6 \mu$.
- **sclerotiorum** (Lib.) de Bary. Sclerotia commonly found in cultivated *Helianthus annuus* showing stem rot in Man. and Sask. Apothecia have been found in the field or obtained in damp chambers from these sclerotia in a few cases. Sclerotia common also on rotted roots of *Daucus carota* and *Pastinaca sativa* in storage in Man. and Sask. Sclerotia occasionally found in *Althaea rosea*, *Brassica oleracea* var. *capitata*, *Cirsium arvense*, *Cucumis sativus*, *Dahlia* sp., *Iva xanthifolia*, *Lactuca sativa*, *Medicago sativa*, *Rudbeckia laciniata* var. *hortensis*, *Urtica gracilis* and *Trifolium pratense* in Man. See Bisby (60, 64).
- **?seminis** (Cooke & Phill.) Rehm. Amongst fallen leaves; Winnipeg; Sept. Small reddish sclerotia give rise each to one to four minute stalked apothecia; spores c. $6 \times 1\frac{1}{2}-2 \mu$.
- Tapesia Rosae** (Pers.) Fuckel. On stems of wild *Rosa* sp.; Univ. Apothecia brown, sessile; spores $7-10 \times 1\frac{1}{2}-2 \mu$.
- Trichopeziza albolutea** (Pers.) Sacc. On deciduous wood; Univ.; det. F. J. Seaver.
- Tympanis Pinastri** Tul. On coniferous wood; Kenora. The asci contain numerous small spores.
- **spermatispora** Nyl. Not uncommon on bark of *Populus*; Univ. eastward. The asci contain many spores $2-4 \times 1 \mu$.

PHACIDIALES

- Clithris lactea** (Cooke & Peck) Ell. & Ev. On dead stems of *Ledum groenlandicum*; Berens River; July. Disc of apothecia whitish; spores $20-40 \times 1\frac{1}{2}-2 \mu$.
- Cryptomyces Pteridis** (Rebent.) Rehm. On fronds of *Pteridium latiusculum* (*Pteris aquilina*); Minaki. Produces black stromata on the leaves.
- Ocellaria ocellata** (Pers.) Schroet. On twigs of *Salix*; Univ. Apothecia golden, erumpent through the bark; spores $30-40 \times 11-14 \mu$.
- Ostropa cinerea** (Pers.) Fr. On fallen branches of *Cornus stolonifera*, *Fraxinus pennsylvanica*, *Populus*, *Quercus macrocarpa*, *Salix*, and *Ulmus americana*; Univ. Spores to $250 \times 2 \mu$.
- Propolis faginea** (Schrad.) Karst. Common on old deciduous wood and stumps, including *Fraxinus*, *Populus* and *Quercus*; Univ. eastward. Apothecia whitish, elongate, flat; spores $20-30 \times 6-8 \mu$.
- Rhytisma acerinum** (Pers.) Fr. On leaves of *Acer Ginnala* and *A. saccharinum*; Portage la Prairie and Univ. Not common, but the hosts are not commonly grown.
- **Andromedae** (Pers.) Fr. On *Andromeda polifolia* in the coniferous regions of Man., north to Churchill and at Prince Albert, Sask.
- [— **Asteris** Schw. The black spots rather commonly found on leaves of *Aster* were found in all cases to be caused by larvae.]
- **punctatum** (Pers.) Fr. Common on leaves of *Acer spicatum* in eastern Man.
- **salicinum** (Pers.) Fr. Everywhere in Man. and Sask. on leaves of *Salix*.
- Schizoxylon compositum** Ell. & Ev. On branches of *Acer Negundo* and *Crataegus*; Univ. The long ascospores break up into segments $4-10 \times 3-4 \mu$.
- **decipiens** Karst. var. **Symphoricarpi** Rehm. On twigs of *Symphoricarpos occidentalis*; Univ. Spores $100-150 \times 1-1\frac{1}{2} \mu$. Det. J. F. Brenckle, who has studied this fungus in North Dakota.
- **insigne** (de Not.) Rehm. On twigs of *Prunus*; Univ. The long ascospores break up into cells $6-9 \times 3-4 \mu$.
- **sepincola** Pers. On *Picea canadensis*; Gimli. Asci c. $300 \times 12 \mu$, 8 spored; spores $220-250 \times 4 \mu$, multiseptate.
- Sphaeropezia Vaccinii** Rehm. This species or a form on old leaves of *Arctostaphylos uva-ursi*; Victoria Beach. Spores $12-15 \times 5-6 \mu$, becoming 4-celled.
- Stictis curtispora** Dearness & Bisby (71: 64). On dead branches of *Populus tremuloides*; Univ. Despite considerable search, no further collections of this *Stictis* have been obtained. The spores are short, $23-40 \times 2 \mu$.
- **fusca** Ell. & Barth. On twigs of *Viburnum Lentago* and *V. Opulus*; Univ. The gray apothecia break through the bark; spores $120-200 \times 1-2 \mu$.
- **mollis** Pers. On twigs of *Caragana arborescens*; Indian Head, Sask.; of *Viburnum Opulus* and ?*Populus*, Univ. and Victoria Beach, Man.
- **radiata** (L.) Pers. On twigs of *Viburnum Lentago*, *Populus*, etc.; Univ., Victoria Beach. Disc flesh-colored, margin stellate or radiate.

HYSTERIALES

- ?**Dichaena Populi** Dearness & Bisby (71:64). On galls on *Populus balsamifera*; Birds Hill, Gimli, Winnipeg. Pycnidia present with spores $18-30 \times 1-3 \mu$. This fungus remains uncertain. The galls look like the ones on this host in Sask., upon which *Cucurbitaria staphula* (q.v.) was found; but no *Cucurbitaria* has been found in Man.
- Glonium stellatum** Muhlenb. in Fr. On decaying *Abies balsamea*; Victoria Beach. Spores 2-celled, c. $20 \times 6 \mu$.
- Graphyllum manitobiense** Dearness & Bisby (71:65). On *Phragmites communis*, Clear Lake; coll. I. L. Connors. Spores muriform, $20-25 (32) \times 8-12 \mu$.
- Hypoderma scirpinum** DC. On *Scirpus validus*; Emma Lake and Vonda, Sask.
- Hypodermella ampla** (J. J. Davis) Dearness. On needles of *Pinus Banksiana*; Elk Island near Victoria Beach, Man., and Macdowall, Sask. Spores with a gelatinous sheath.
- **concolor** (Dearness) Darker. Recorded by Darker (The Hypodermataceae of Conifers, Contr. Arnold Arboretum, 1932) on needles of *Pinus contorta* var. *latifolia* (= var. *Murrayana*); Cypress Hills Forest Reserve, Sask.; and found there also by R. C. Russell, June 25, 1936: ascospores $40-55 \times 5-7 \mu$, with a hyaline sheath.
- Hysterium acuminatum** Fr. On twigs of *Juniperus horizontalis* and *Picea canadensis*; Berens River, Victoria Beach. Hysterothecia small; spores $13-16 \times 5-6 \mu$, brown, 4-celled; sometimes up to 21μ long. This "alpine" form is not uncommon, but is not detected unless the twigs are gone over with a hand lens. (*Mytilidion decipiens* may be included).
- **insidens** Schw. On wood of *Celastrus scandens*; Univ. Spores c. $40-42 \times 6 \mu$, becoming 8-septate, brown with the apical cells lighter.
- **pulicare** Pers. Common on old bark of *Betula alba* var. *papyrifera*; Berens River south-eastward. Spores $20-28 \times 6-8 \mu$, 4-celled, end cells paler.
- Hysterographium flexuosum** (Schw.) Rehm. On twigs of *Viburnum Lentago*; Univ. Spores muriform, $40-52 \times 18-20 \mu$, brown.
- **Fraxini** (Pers.) de Not. On almost every dead branch of *Fraxinus pennsylvanica* across Manitoba; rarely on *Viburnum Lentago* and *V. Opulus*. Can be found with mature spores any month during the year. Spores $34-44 (48) \times 13-18 \mu$. Small hysterothecia were found to contain spores as large as those in the large hysterothecia.
- **Mori** (Schw.) Rehm. Common on old wood, especially of *Populus* and *Salix*; Norway House south to Univ. Spores brown, $15-23 \times 6-10 \mu$, 3 to 5-septate, with one to three longitudinal septa.
- **novacaesariense** (Eli.) Roum. On wood of conifer; Berens River. Spores muriform, golden yellow, $38-48 \times 11-14 \mu$.
- Lophium mytilinellum** Fr. On coniferous bark; Norway House. Hysterothecia short, 0.2-0.4 mm.; spores $90-120 \times 1\frac{1}{2}-2 \mu$. Perhaps only a small form of *L. mytilinum*.
- **mytilinum** (Pers.) Fr. On bark of *Larix laricina*, old *Picea canadensis*, *Pinus Banksiana*, and boards of *Pinus*; Berens River to Univ. Hysterothecia 0.4-0.8 mm. long; spores up to $150 \times 2\frac{1}{2} \mu$.
- Lophodermium juniperinum** (Fr.) de Not. On old needles of *Juniperus horizontalis*; Victoria Beach. Asci c. $100 \times 12 \mu$; spores filiform, about 2μ wide, with sheath.
- ?**Piceae** (Fuckel) v. Höhn. On needles of *Abies balsamea*; Berens River, Man. and perhaps at Kingsmere Lake, Sask. Hysterothecia amphigenous; spores $60-80 \times 2 \mu$. Conspicuous browning and death of the affected foliage occurs.
- **Pinastri** (Schröd.) Chev. On needles of *Pinus Banksiana*; Norway House southward, and at Macdowall, Sask.
- **sphaerioides** (Alb. & Schw.) Duby. Common on fallen leaves of *Ledum groenlandicum*, Berens River southward.
- **tumidum** (Fr.) Rehm. On overwintered leaves of *Amelanchier alnifolia*; Indian Head, Sask.
- Mytilidion Karstenii** Sacc., or near. On coniferous wood; Norway House. Spores $38-46 \times 4-5 \mu$, 5-celled, brown.
- **Thujarum** (Cooke & Peck) Lohman. On *Thuja occidentalis*; eastern Man. Spores $29-41 \times 10-13 \mu$, brown, mostly 4-6-celled, the two center cells often larger.

TUBERALES

- Pseudobalsamea microspora* Diehl and Lambert (Mycologia, 22: 223, 1930). Found in a mushroom bed near the Univ. by W. F. Hanna, identification verified by E. B. Lambert.
- Tuber candidum* Hark. Beneath bark on a fallen log of ?*Populus*; Univ.; Sept.; coll. J. H. Craigie. Tuber white; asci 4-spored; spores $33-44 \times 23-33 \mu$. Identified by Dr. Gilkey. She writes: "Since I received your specimen, I have collected several of the same species in similar situations, though previously I had never seen it grow elsewhere than under several inches of earth."
- *separans* Gilkey. One specimen in Assiniboine Park, Winnipeg; C. W. Lowe; det. Dr. Gilkey. First found in California; reported from Isle Royale, Mich., by Povah (13).

PERISPORIALES

- Apiosporina Collinsii* (Schw.) v. Höhn. The witches' broom of *Amelanchier alnifolia* is very common across Man. and Sask.
- Erysiphe Cichoracearum* DC. Collected on *Ambrosia trifida*, *Aster Lindleyanus*, *A. novae-angliae*, *Chrysanthemum* sp. (cult.), *Galium* sp., *Grindelia squarrosa*, *Helianthus annuus* and *H. atrorubens* (cult.), *H. divaricatus*, *Hieracium canadense*, *Lappula deflexa*, *L. echinata*, *Mentha arvensis* var. *canadensis*, *Mertensia paniculata*, *Plantago major*, *Rudbeckia laciniata*, *Stachys palustris*, and *Zinnia elegans* across Man.; possibly in the conidial stage causing some injury to *Peunia hybrida* (cult.) in Winnipeg since 1923; on *Mertensia paniculata* and species of *Artemisia*, *Aster*, and *Solidago* in Sask.; and possibly in the conidial stage on *Althaea* sp. (cult.); Saskatoon, Sask.
- *Galeopsidis* DC. On *Galeopsis tetrahit*; Tisdale, Sask.; probably on *Mentha glabrior*, *Scutellaria lateriflora*, and *Stachys palustris* in Man., and on *Stachys scopulorum* at Avonhurst, Sask.
- *graminis* DC. On *Agropyron repens*, *Beckmannia Syzigachne*, *Hordeum jubatum*, *Poa compressa*, *Secale cereale* and *Triticum aestivum* in Man. and Sask.; sometimes causing some injury to rye or wheat; on *Hordeum vulgare*, *Phleum pratense*, *Poa nemoralis*, *P. palustris*, *P. pratensis* in Man., extending north to Churchill. A common and highly specialized fungus on the Gramineae.
- *Polygoni* DC. On *Delphinium* sp. (cult.: often injurious), *Lathyrus odoratus* (rather injurious), *L. venosus*, *Oenothera biennis*, *Polygonum erectum*, and *Trifolium pratense* in Man. and Sask.; on *Amphicarpa monoica*, *Calla palustris*, *Glycyrrhiza lepidota*, *Pisum sativum*, *Polygonum aviculare* and *Thalictrum dasycarpum* in Man.; on *Polygonum neglectum* in Sask. This mildew on red clover first appeared in Man. in 1922, was serious in 1923, is prevalent now as far north as The Pas, but not so injurious.
- Microsphaera Alni* (DC) Wint. On *Alnus incana*; Birds Hill, Man. and Emma Lake, Sask.; on *Corylus* sp., *Lonicera glaucescens* and *L. tatarica* in Man. and Sask.; on *L. Sullivantii*, *Syringa vulgaris* and *Viburnum Lentago* in Man.; on *Betula* sp. and *Vicia americana* var. *angustifolia* in Sask.
- *Alni* var. *calocladophora* (Atk.) Salmon. On *Quercus macrocarpa*; Univ. The tips of the appendages near lateral branches.
- *diffusa* Cooke & Peck. Probably this species on *Lathyrus odoratus* in Man. and Sask., and on *Symphoricarpos occidentalis* in Man. and *S. albus* in Sask.
- Phyllactinia corylea* (Pers.) Karst. On *Betula alba* var. *papyrifera* in Man. and Sask.; on *Celastrus scandens*, *Cornus stolonifera* and *Corylus rostrata* in Man.; on *Alnus incana* and *Cornus instolonea* in Sask.
- Podosphaera Oxyacanthae* (DC.) de Bary. On *Amelanchier alnifolia*, *Prunus Besseyi* and *Prunus* spp. cult. in Man. and Sask.; on *Prunus pumila* in Man. and *P. melanocarpa* in Sask. Sometimes injurious to *Prunus*.
- Rhizogene Symphoricarpi* Syd. On leaves of *Symphoricarpos occidentalis*; Carlyle, Katepwa, and Sutherland, Sask. This rare and interesting fungus can be found on the living leaves during the summer, but the ascospores are not mature. Leaves wrapped in cheesecloth by R. C. Russell and placed under a hedge over winter, showed spores fairly mature by May 13, 1931. These spores were $10-13 \times 5-6 \mu$, two-celled, yellowish-brown. See Mycologia, 20: 292, for status of *Lasiobotry. Lonicerae* J. Kunze, as described in N. A. Pyrenomyces.
- Sphaerotheca Humuli* (DC.) Burrill. On *Rosa* spp. (wild and cult.), *Rubus idaeus* var. *strigosus* and *Fragaria* sp. (cult.) in Man. and Sask.; on *Epilobium adenocaulon*, *Geum macrophyllum*, *G. strictum*, *Humulus Lupulus*, *Rhus glabra*, *Rosa blanda*, *Rubus triflorus* in Man.;

on *Gilia linearis* and *Viola canadensis* in Sask. The mildew found in the conidial stage on roses in greenhouses or gardens is included here, although *S. pannosa* may sometimes be present on these roses. Powdery mildew of Raspberry was injurious in Man. in 1935.

Sphaerotheca Humuli var. **fuliginea** (Schlecht.) Salmon. On *Shepherdia canadensis* and *Taraxacum officinale* in Man. and Sask.; on *Agastache Foeniculum*, *Bidens frondosa*, *Viola canadensis* and *V. tricolor* in Man.; on *Bidens glaucescens*, *Veronica longifolia* and *Shepherdia argentea* in Sask. This mildew on dandelion extends to or near Churchill, Man.

— **mors-uvae** (Schw.) Berk. & Curt. On *Ribes floridum* and *R. nigrum* in Man. and Sask.; on *R. hudsonianum*; Lake Waskesiu, Sask. The mildew on cultivated black currant was first noted in Man. in 1924, and has caused some damage in subsequent years. It seems likely, however, that the fungus is a "native" of Western Canada.

Uncinula circinata Cooke & Peck. On *Acer spicatum*; Victoria Beach eastward. A collection at Minaki had many four-spored asci.

— **necator** (Schw.) Burrill. On *Psedera quinquesfolia*; Bethany and Univ., Man., Saskatoon, Sask.

— **parvula** Cooke & Peck. One collection on *Fragaria* sp.; Univ. The *Uncinula* present agrees with *U. parvula* except that the appendages are rather too long and thick.

— **Salicis** (DC.) Wint. Common on *Populus balsamifera* and *Salix* spp. in Man. and Sask.; on *Populus angustifolia*; Indian Head and Kamsack, Sask. Specimens on *Salix* sp. from along the Hudson Bay railway were noteworthy for showing perithecia but very little mycelial development.

HYPOCREALES

Acrosporum compressum Tode. On old *Agropyron* and *Bromus*; Univ.; May. Perithecia erect; spores $c. 300 \times 1 \mu$. Miss Brandriff (*Mycologia*, 28: 228) is inclined to place this puzzling fungus near the *Coryneliales* and *Pseudosphaeriales*.

Calonectria Dearnessii Ell. & Ev. (a form of *C. diminuta* (Berk.) Berl. & Vogl.?). On *Massaria* on *Amelanchier alnifolia*; Univ. Asci $c. 100 \times 14 \mu$; spores $21-28 \times 6-7 \mu$, becoming 4-celled.

Chromochroa gelatinosa (Tode) Seaver. On *Salix*; Univ. Stromata soft, greenish-yellow; asci 16-spored; spores $4-6 \mu$, greenish-brown.

Claviceps microcephala (Wallr.) Tul. On *Glyceria (Panicularia) grandis*; Clandeboye; on *Phleum pratense*; Chater. Sclerotia small, on grasses with small spikelets; probably only a form of *C. purpurea*.

— **nigricans** Tul. On *Eleocharis* sp.; Carlyle and Saskatoon, Sask.

— **purpurea** (Fr.) Tul. On *Agropyron dasystachyum*, *A. Smihii*, *A. tenerum*, *Bromus inermis*, *Calamagrostis* sp., *Elymus innovatus*, *E. Macounii*, *Hordeum vulgare*, *Secale cereale*, *Spartina gracilis*, *Triticum aestivum* and *T. durum* in Man. and Sask.; on *Agropyron cristatum*, *A. repens*, *Avena fatua*, *Dactylis glomerata*, *Elymus canadensis*, *E. curvatus*, *E. dahuricus*, *Festuca elatior*, *Hordeum jubatum*, *Phalaris arundinacea*, *Poa pratensis* and *Stipa viridula* in Man.; *Avena Hookeri*, *A. sativa* and *Bromus Pampellianus* in Sask. Common, especially after a damp spring. Rye often suffers dockage at the elevators because of ergot, and livestock may be killed by eating rye screenings containing the sclerotia: one farmer, not knowing that ergot was poisonous, lost 30 head of cattle. Sometimes injurious to durum wheats; not common on bread wheat. The sclerotia have been germinated many times. Several records of hosts are from the Rust Research Laboratory, Winnipeg.

Cordyceps ?acicularis Rav. in Berk. From an insect pupa; Berens River. Head cylindric, $7 \times 1\frac{1}{2}$ mm., yellowish brown; stalk $17 \times \frac{3}{4}$ mm., brownish, pruinose; asci to $120 \times 4 \mu$; spores $50-100 \times 1\frac{1}{2}-2 \mu$.

— **clavulata** (Schw.) Ell. & Ev. A specimen was found by Dr. Dearness on *Lecanium* sp. on a twig sent him; Univ.

— **militaris** (L.) Link. Reported by the late Norman Criddle as present on "grubs" at Treesbank; specimens not seen.

[*Creonectria* spp.: included under the more familiar name *Nectria*.]

Eleutheromyces subulatus (Tode) Fuckel. On old *Agarics* and *Polypores*; Norway House, Victoria Beach. Spores with a thin appendage at each end. Prof. H. S. Jackson writes that he agrees with von Höhnelt in placing this species in the *Fungi Imperfecti*.

- Epichloe typhina** (Pers.) Tul. (*Typhodium typhinum* Seaver). Rarely seen in eastern Man. on Elymus, etc.; more common in southwestern Man.; on *Agropyron dasystachyum*, *A. Smithii*, *Calamagrostis inexpansa* and *C. sp.* in Sask.
- Gibberella ?Saubinetii** (Mont.) Sacc. (or *G. Zeae* (Schw.) Petch). One collection on old stalk of *Zea Mays*; Univ. The Fusarium stage (*F. graminearum*, *q.v.*) has not been encountered in Man. Perithecial wall blue; spores fusiform, becoming septate.
- Hypocrea chionea** Ell. & Ev. On old deciduous wood, Univ.; perhaps this species on old leaves of Populus; Minaki. Previously recorded only from London, Ont. Stromata whitish, small; asci 85–100 \times 4–5 μ , 8-spored, uniseriate; the spores each divide into two halves about 4 μ in diameter.
- **citrina** (Pers.) Fr. On old *Fomes fomentarius*, *F. pinicola*, and *Polyporus betulinus*; coniferous areas in Man. Halves of spores 3–4 μ .
- **pallida** Ell. & Ev. On old *Polyporus pubescens*; Kenora; det. F. J. Seaver.
- **patella** Cooke & Peck. On deciduous wood and old Hypoxylon along the Red River.
- **rufa** (Pers.) Fr. On bark and wood of *Acer Negundo* and Populus; Univ.
- **sulphurea** (Schw.) Sacc. On deciduous wood; Univ. Stromata large, yellow; spores 10–12 \times 4 μ , dividing into two segments each 5–6 \times 4 μ .
- Hypomyces apiculatus** (Peck) Seaver. On deciduous wood; Univ. Stromata effuse, reddish-purple to yellowish; asci c. 150 \times 8 μ ; spores 28–32 \times 5 μ , 2-celled, apiculate.
- **aurantius** (Pers.) Tul. On old *Polyporus adustus*, *P. picipes*, *P. versicolor*; Univ. to Berens River. Stromata orange to brick-red; spores verrucose, pointed, 2-celled, 18–24 \times 4–5 μ .
- **lactiflorum** (Schw.) Tul. Common on Lactarius, especially *L. piperatus* (*q.v.*); Univ. to Berens River; reported by travellers in the north to be present up to the Arctic Circle in the Yukon. Discussed and illustrated by Buller (82, vol. II).
- **rosellus** (Alb. & Schw.) Tul. On old fungi, including ?Lactarius and *Polyporus planellus*; Univ. northward. Stromata rose-colored; spores apiculate, 2-celled, 20–40 \times 5–6 μ .
- Melanospora lagenaria** (Pers.) Fuckel. Rather common on old *Fomes pinicola*; Victoria Beach. Perithecia caespitose in patches, yellow then blackish, with a beak 1–2 mm. long; spores 10–14 \times 6–8 μ , brownish, continuous.
- Nectria cinnabarina** (Tode) Fr. Common on *Acer Negundo*, *Celastrus scandens*, *Prunus* spp., *Ribes* spp. and *Spiraea* sp. (cult.) in Man.; on *Prunus melanocarpa* and *Ulmus ?parviflora* in Sask. Semi-parasitic, but not noticeably injurious. Ascospores 14–20 \times 4–6 μ , 2-celled. See also *Tubercularia vulgaris*.
- **?cucurbitula** Sacc. On fallen Picea; Clear Lake. Asci immature.
- **episphaeria** (Tode) Fr. On *Diatrype stigma*, *Eutypa lata*, *Valsa* sp., etc.; Berens River to Univ. Spores 9–12 \times 5–6 μ .
- Peziza** (Tode) Fr. Common around Winnipeg on old Populus and other deciduous wood. The perithecia collapse at the top to become pezizoid; spores 10–15 \times 5–6 μ , 2-celled.
- **?rubicarpa** Cooke. On stems of Corylus; Univ. Perithecia bright red, a few on a concolor stroma; asci c. 60 \times 5 μ ; spores 8–10 \times 4 μ , becoming 2-celled.
- Peckiiella viridis** (Alb. & Schw.) Sacc. On Russula spp., less common on Lactarius spp.; Univ. to Victoria Beach eastward. The mycelium prevents the development of the gills, and produces a striking greenish stroma over them.
- Scoleconectria balsamea** (Cooke & Peck) Seaver. Common on branches of *Abies balsamea*; Berens River south and east.
- Sphaeroderma Hulseboschii** Oudem. On dung of rabbit; Beaver Creek, Sask.; det. R. F. Cain.
- Thyronectria berolinensis** (Sacc.) Seaver. Common on *Ribes floridum* and the cultivated species *R. aureum*, *R. Grossularia* and *R. vulgare*; Univ. Spores muriform, 15–25 \times 6–8 μ .
- DOTHIDEALES**
- Curreyella Bisbyi** Dearness (71:69). On branches of *Fraxinus pennsylvanica*; Univ. Type collected Apr. 22, 1928, collected also May 20, 1928; has not been seen since. Stromata black, erumpent, containing loculi with asci 75–100 \times 12–16 μ ; spores 20–28 \times 7–10 μ , muriform.
- Dibotryon morbosum** (Schw.) Theiss. & Syd. (*Plowrightia morbosa* (Schw.) Sacc.). Very common on *Prunus virginiana*, *P. pumila*, and a *Prunus* cultivated for its flowers, called "May-day tree," in Man.; on *P. melanocarpa* and *P. pennsylvanica* in Sask.

- Dothidea ribesia* (Pers.) Fr. On *Ribes floridum* and *R. vulgare*; Univ.
- Elsinoe Ledi* (Peck) Zeller (*Aulographium Ledi* Peck). On living leaves of *Ledum groenlandicum*; eastern Man. The fungus and disease are as described by Zeller and Deremiah (Phytopath. 31: 965, 1931).
- Endodothella?* sp. On overwintered stems of *Thermopsis rhombifolia*; Saskatoon and Totzke, Sask.; May and June. Stroma forming a clypeus with the epidermis, irregular, black, containing locules with asci containing spores $12-15 \times 5-6 \mu$, brownish, rather unequally 2-celled. Description not found; material mostly immature.
- Montagnella Heliopsisidis* (Schw.) Ell. & Ev. On old stems of ?*Aster*; Gretna; C. W. Lowe. Immature, but the large black stromata are fairly distinctive.
- Ophiodothis alneum* (Fr.) Ell. & Ev. On *Alnus incana*; The Pas; coll. P. H. Gregory. Black stromata on living leaves; no spores found. Seymour includes this amongst the Fungi Imperfecti.
- Phyllachora graminis* (Pers.) Fuckel. On *Elymus canadensis* and *Muhlenbergia cuspidata* in Man. and Sask.; on *Agropyron tenerum*, *Agrostis hyemalis*, *Elymus virginicus* and *Oryzopsis asperifolia* in Man.; on *Calamagrostis canadensis* and *Distichlis stricta* in Sask. Theissen and Sydow (Ann. Myc. 13: 431) restrict the name *P. graminis* to the form on *Elymus*.
- *Heraclei* (Fr.) Fuckel. On *Heracleum lanatum*; Winnipeg Beach.

MICROTHYRIALES

- Diplocarpon Rosae* Wolf (see *Actinonema*). On overwintered leaves of *Rosa* sp. cult., Saskatoon, Sask.
- Halbaniella (Asteridium) Linnaeae* Dearness (71: 66). Type on leaves of *Linnaea borealis* var. *americana*; Victoria Beach. Perithecia $100-120 \mu$ wide; asci $20-27 \times 12-15 \mu$; spores hyaline, 4-celled, $13-18 \times 3 \mu$. Also recorded from New York.
- Stigmatella Juniperi* (Desm.) Wint. (*Seynesiella* Arn.). On leaves of *Juniperus communis*; Victoria Beach; June-July. Ascospores $c. 20 \times 8 \mu$.
- *rubicola* (Ell. & Ev.) Theiss. (*Asterina rubicola* Ell. & Ev.). On leaves of *Rubus idaeus* var. *aculeatissimus*; Clear Lake, Keewatin, Winnipeg. Ascospores 2-celled, $12-15 \times 7-9 \mu$.

SPHAERIALES

Chaetomiaceae

- Ascotricha pusilla* (Ell. & Ev.) Chivers (*Chaetomium Ellisianum* Sacc. & Syd.). On rotting lath in greenhouse; Saskatoon, Sask. Hairs slender, tapering; spores $6-7 \times 4\frac{1}{2}-5\frac{1}{2} \mu$.
- Chaetomium bostrychodes* Zopf.. On dung of horse, goat and sheep; Univ. Hairs coiled; spores $6-8 \times 5-6 \mu$.
- *elatum* Kunze & Schmidt. Common on mouldy heads or straw of wheat and barley, old broom, Iris leaves, partridge dung, etc., in Man. and Sask.
- *funicola* Cooke. On dead seedlings of barley, old paper, and isolated six times from soil in Man. $4-7 \times 2-4 \mu$.
- *fusiforme* Chivers. On dung of porcupine; Clear Lake; det. R. F. Cain. A rare species.
- *globosum* Kunze (*C. olivaceum* Cooke & Ell.). On glumes of *Triticum aestivum* and in soil in Man.; on dead wheat plants; Annaheim, Sask.; on dung of rabbit at Beaver Creek, Sask.
- *indicum* Corda (*C. setosum* Wint.). One isolation from butter. $6-8 \times 4-5 \mu$.
- *murorum* Corda. On old herbs, dead crowns of cereals, and dung of horse and sheep in Man. $12-14 \times 7-8 \mu$.
- *spirale* Zopf. On paper in a laboratory culture. Spores brown, slightly apiculate, $9-10 \times 7-8 \mu$. An isolation from soil also apparently belongs here.

Sordariaceae

- Bombardia arachnoidea* (Niessl) Cain (3: 73). On dung of deer and porcupine; Clear Lake, Man.; of rabbit; Emma Lake, Sask.: det. R. F. Cain.
- *caerulea* (Petch) Cain (3: 70). On horse dung; Univ. Perithecia bluish-purple; spores cylindrical, multiguttulate, $40-50 \times 4 \mu$, with a gelatinous appendage about 40μ long at each end.
- *coprophila* (Fr.) Kirsch. On cultures of horse dung; Univ. Spores $40-60 \times 3-5 \mu$ with long apical appendages, finally swelling at one end.

- Coniochaeta discospora* (Auersw.) Cain. On dung of porcupine; Clear Lake, Man.; of rabbit; Beausejour, Man., Emma Lake and North Battleford, Sask.; all det. R. F. Cain. On dung of ptarmigan; Long Point near Churchill, Man.; coll. Wm. Güssow: perithecia bearing short, dark hairs; asci c. $100 \times 12 \mu$, uniseriate; spores disc-shaped, surrounded by a mucilaginous envelope, $12-13 \times 10 \times 5 \mu$.
- *leucoplaca* (Berk. & Rav.) Cain. On dung of porcupine; Clear Lake, Man.; of rabbit; Beausejour, Man., and Humboldt, Sask.; all det. R. F. Cain. Also at Victoria Beach, Man.; spores discoid, c. $10 \times 7 \times 4 \mu$.
- *Saccardo* (Marchal) Cain (3: 65). On dung of porcupine; Clear Lake, Man.; of rabbit; Emma Lake, Macdowall, Muenster and Prince Albert, Sask.; all det. R. F. Cain. Not recorded by Cain elsewhere in North America.
- Delitschia bisporula* (Crouan) Hansen. On dung of porcupine; Clear Lake, Man.; of rabbit; Beausejour, Man., Dana, Macdowall, Muenster and Prince Albert, Sask.; all det. R. F. Cain. On bird droppings from Berens River; perithecia with stiff bristles up to 100μ long \times $6-8 \mu$ at base; spores $18-20 \times 6 \mu$, brown, constricted at the septum.
- *furfuracea* Niessl. On rabbit dung sent to Ottawa from Long Point near Churchill; coll. Wm. Güssow; det. S. Dowding. Spores brown, 2-celled, $42-50 \times 18-20 \mu$, with a hyaline sheath.
- *Marchalii* Berl. & Vogl. On dung of porcupine; Clear Lake, Man.; of rabbit; Beausejour, Man. and Dana, Sask.; all det. R. F. Cain. On rabbit dung; Univ., Man.: spores $10-11 \times 5-6 \mu$, 2-celled with a hyaline sheath.
- *timagamensis* Cain. On rabbit dung; Vivian. Perithecia nearly smooth; spores $20-24 \times 6-7 \mu$, 2-celled with lateral germ-slits.
- *Winteri* Phill. & Plowr. On rabbit dung from Beaver Creek, Sask.; det. R. F. Cain.
- Gelasinospora cerealis* Dowding (122). Isolated from diseased crown of *Avena sativa*; Souris; from diseased crown of *Triticum durum*; Deloraine; isolations by J. E. Machacek. Perithecia subglobose, membranaceous, $600-700 \times 300-400 \mu$; asci $215-260 \times 23-25 \mu$, with two radial thickenings near the apical perforation; spores 8 per ascus, $26-32 \times 23-25 \mu$, marked with "dimples" or foveolate sculpturing over the surface of the spore. The genus *Gelasinospora* was erected to include this and the following Manitoban species.
- *tetrasperma* Dowding (122). On dung of ptarmigan from Hudson's Bay, 30 miles north of Fort Churchill, Man.; coll. Wm. Güssow; isolated and studied by S. Dowding. Apparently also in Ontario and England. Perithecia black, membranaceous, pyriform, c. $600 \times 300 \mu$, asci normally 4-spored, c. $230 \times 8 \mu$; spores mostly $20-28 \times 13-16 \mu$, hyaline then greenish-black, foveolate. Dr. Dowding reports details of the life history, and it has also been used by Dodge in his studies of sex, etc. (see *Mycologia*, 27: 429, 1935). See also Buller (82, vol. V: 110).
- Hypocopra merdaria* (Fr.) Fr. On rabbit dung; Beausejour, Man. and Dana, Sask.; det. R. F. Cain.
- Pleurage heterochaeta* Griff. (a *Sordaria*). On horse dung; Univ. Perithecia clothed with agglutinated hairs; asci 16-spored, biseriate; spores $30-34 \times 16-20 \mu$, with two gelatinous appendages at each end, sometimes fused at one end.
- Sordaria anomala* (Griff.) Sacc. On bird droppings; Univ. Peritheciium smooth above the mycelium in which it is imbedded, greenish with a short black beak; asci 4-spored; spores $22-24 \times 16-18 \mu$, with a primary appendage about as long as the spore.
- *anserina* (Ces.) Wint. (*Pleurage anserina*). On horse dung; Univ. and Victoria Beach; det. in part by R. F. Cain. Perithecia black, pyriform; asci normally 4-spored; spores normally $36-42 \times 18-21 \mu$. Illustrated by Dr. Dowding (119) who studied the sex in this species. She found about one spore in a thousand to be a "giant" spore, about one in two hundred to be a "dwarf." See Buller (82, vols. IV and V).
- *bombardioides* Auersw. On dung of porcupine; Clear Lake, Man.; of rabbit; Annaheim and Emma Lake, Sask.; all det. R. F. Cain. Also at Univ. and eastern Man.; perithecia smooth, coriaceous; spores $20-30 \times 10-12 \mu$, surrounded by a gelatinous sheath.
- *citrina* Petch. Abundant in damp chamber on dung of porcupine from Clear Lake and eastern Man.; det. R. F. Cain, who finds that it agrees with Petch's description. This species is apparently known only in Ceylon and Manitoba, fairly common in both places, on dung of elephant and of porcupine. The fungus, as Cain points out in a letter, is really a

- Bombardia. It is first evident as a thin lemon-yellow web of mycelium over the dung, from which arise bottle-shaped phialides which produce globular phialospores; then perithecia appear, covered with a yellow-green tomentum; spores 8 per ascus, $65-85 \times 4-6 \mu$, with a thin hyaline lash projecting from each end up to 30μ long; some spores finally develop yellow swellings near one end, the remainder of the spore constituting long and short appendages.
- Sordaria collapsa** (Griff.) Sacc. On rabbit dung; Macdowall, Sask.; det. R. F. Cain. On dung of rabbit and goat; Univ., Man.; asci $200-300 \times 80-100 \mu$, with about 64 spores; spores $16-23 \times 10-15 \mu$, with appendages which finally collapse.
- **curvicolla** Wint. On dung of porcupine; Clear Lake, Man.; of rabbit; Emma Lake and Muenster, Sask.; all det. R. F. Cain. On dung of goat, rabbit and sheep; Univ. Man.: spores 128 or more per ascus, $16-19 \times 10-11 \mu$, with primary and secondary appendages. See Buller (82, vol. V, as *Pleurage curvicolla*).
- **curvula** de Bary (*Pleurage conica* (Fuckel) Griff. & Seaver). On dung of porcupine; Clear Lake, Man.; of rabbit; Beaver Creek, Dana, Emma Lake and Muenster, Sask.; all det. R. F. Cain. On dung of goat and rabbit; Univ.; hairs short, in tufts near the apex of the perithecium; spores $22-26 \times 14-16 \mu$, with appendages.
- **decipiens** Wint. On dung of horse; Victoria Beach, Man.; of rabbit; Muenster, Sask.; det. R. F. Cain. Also at Univ., Man.; perithecia smooth, translucent; spores $38-42 \times 20 \mu$, with primary and secondary appendages.
- **erostrata** (Griff.) Sacc. On dung of horse; Univ. This species is anomalous in the lack of a beak on the perithecium. Secondary appendages were not noted on the spores, otherwise the fungus fits Griffith's description; verified by R. F. Cain.
- **fimbriata** Bayer. On rabbit dung; Scott, Sask.; det. R. F. Cain.
- **fimicola** (Rob.) Ces. & de Not. Common on dung in Man. and Sask.; occasional in soil or from dead parts of cereals in Man.; from seeds of Bromus; Saskatoon, Sask. Spores $16-20 \times 10-12 \mu$, with the germ pore surrounded by a gelatinous sheath. See Buller (82, vol. V as *Fimetaria fimicola*).
- **leporina** Cain. On dung of horse and rabbit; Univ. Perithecia $600-700 \times 400-500 \mu$, smooth; asci $240-290 \times c. 66 \mu$, with about 64 spores; spores $19-21 \times 11-12 \mu$, with appendage usually eccentric at each end of the spore.
- **linguiformis** Cain (3: 43). On dung of porcupine; Clear Lake, Man.; of rabbit; Prud'homme, Sask.; both det. R. F. Cain.
- **macrospora** Auersw. Cultured on agar, from dung of rabbit; Univ. Spores larger than in the common *S. fimicola*, being $25-32 \times 15-18 \mu$, entirely surrounded by a gelatinous envelope.
- **minuta** Fuckel. On dung of horse; Victoria Beach, Man.; of rabbit; Beaver Creek, North Battleford and Prud'homme, Sask.; all det. R. F. Cain. On old horse dung; Univ., Man.; hairs tufted, short, recurved; spores $20-23 \times 13-14 \mu$, with primary and secondary appendages.
- **neglecta** Hansen. On dung of porcupine; Clear Lake, Man.; det. R. F. Cain.
- **ontariensis** Cain. On rabbit dung; Beaver Creek, Sask.; det. R. F. Cain.
- **pleiospora** Wint. On rabbit dung; Muenster, Sask. Cain (3: 45) states that these specimens have 16-spored asci and spores $31-36 \times 20-24 \mu$.
- **septospora** Cain. On dung of porcupine; Clear Lake; det. R. F. Cain.
- **setosa** Wint. On dung of rabbit; Dana and Emma Lake, Sask.; det. R. F. Cain; Univ. and eastern Man. Spores about 128 per ascus, $18-24 \times 11-14 \mu$, with a primary appendage bearing a secondary appendage, at each end of the spore.
- **similis** Hansen. On porcupine dung; Clear Lake; det. R. F. Cain.
- **taenioides** (Griff.) Sacc. On horse dung from Victoria Beach; det. R. F. Cain. On dung of goat and horse, Univ.: spores 4 per ascus, $56-62 \times 29-32 \mu$, apiculate at one end, and with very long gelatinous appendages.
- **tetraspora** Wint. On dung of porcupine; Clear Lake, Man.; of rabbit; Beaver Creek, Emma Lake and Prud'homme, Sask.; all det. R. F. Cain. On rabbit dung, Univ.; perithecia translucent, with short, septate hairs; spores 4 per ascus, $18-20 \times 12-13 \mu$, with appendages.
- **vestita** Zopf. On dung of horse; Victoria Beach, Man.; of rabbit; Beaver Creek, Muenster and Prud'homme, Sask.; all det. R. F. Cain. On dung of horse and goat, Univ., Man.; perithecia greenish, with few olivaceous hairs, spores $30-34 (40) \times 18-20 \mu$, with characteristic primary and secondary appendages.

- Sordaria zygospora** Speg. On horse dung; Univ., Man.; on rabbit dung; Beaver Creek, Sask.; det. R. F. Cain. This unusual fungus is apparently rare in Man.
- Sporormia australis** Speg. On rabbit dung; Prince Albert, Sask.; det. R. F. Cain.
- **dakotensis** Griff. On dung of porcupine; Clear Lake, Man.; of rabbit; Beaver Creek and Dana, Sask.; det. R. F. Cain.
- **fasciculata** Jensen. Two isolations from soil in Man. (76). Asci $40-55 \times 20-27 \mu$, 8-spored; spores 4-celled, brown, $28-32 \times 6-7 \mu$.
- **heptamera** Auersw. On rabbit dung; Beaver Creek, Sask.; det. R. F. Cain.
- **intermedia** Auersw. On rabbit dung from eight localities in Sask.; det. R. F. Cain; on cow dung; Univ., Man.; spores 4-celled, $51-54 \times 9-10 \mu$. Possibly this species on an old wooden shingle, Univ.: spores $36-42 \times 8-9 \mu$.
- **lata** Griff. On dung of porcupine; Clear Lake, Man.; of rabbit; Beaver Creek and Dana, Sask.; all det. R. F. Cain. On rabbit dung, Univ., Man.; spores 4-celled, $44-50 \times 17-20 \mu$.
- **leporina** Niessl. On dung of porcupine; Clear Lake, Man., and on rabbit dung from six places in Sask.; det. R. F. Cain. Specimens at Univ., Man. bore spores $44-50 \times 17-20 \mu$.
- **?leptosphaerioides** Speg. On old pits of *Prunus nigra*; Univ. Spores 4-celled, $28-35 \times 4-6 \mu$.
- **longispora** Cain. On rabbit dung; Dana, Sask.; det. R. F. Cain.
- **megalospora** Auersw. On dung of deer from Clear Lake, Man., and of rabbit from Prud'homme, Sask.; det. R. F. Cain. On old cow dung at Univ., Man., with spores $60-78 \times 13-18 \mu$.
- **minima** Auersw. On deer dung from Clear Lake, Man.; det. R. F. Cain. On dung of cow and rabbit; Univ.; spores $26-30 \times 5-6 \mu$.
- **octomera** Auersw. On dung of porcupine from Clear Lake, Man., and of rabbit from Beausejour, Man. and five stations in Sask.; det. R. F. Cain. On horse dung, Univ., Man., with spores 8-celled, third cell from the apex enlarged, $45-52 \times 8-9 \mu$.
- **pilosella** Cain. On rabbit dung from Saskatoon, Sask.; det. R. F. Cain (3:94).
- **tuberculata** Griff. On dung of horse and rabbit; Univ. Beak of perithecia long and tuberculate; asci $120-150 \times 14-15 \mu$; spores 4-celled, $28-36 \times 5-6\frac{1}{2} \mu$.
- Zygospermella insignis** (Mouton) Cain (*Delitschia insignis* Mouton). On old horse dung; Univ. Perithecia smooth, up to 1 mm. high, $500-700 \mu$ wide; spores biseriate, $40-58 \times 12-18 \mu$, 2-celled, with hyaline appendages extending from each end of the spore to a length of $15-25 \mu$. Known in Belgium, England, and Manitoba.

Sphaeriaceae

- Acanthostigma ?Clintoni** (Peck) Sacc. On bark of Populus; Univ. Perithecia setose; spores $30-36 \times 3-4 \mu$, up to 7-septate, hyaline.
- **?dispar** Morg. On bark of Populus; Univ. Asci c. $80 \times 14-16 \mu$; spores fusiform, $30-52 \times 4-5 \mu$, several septate.
- **scopula** (Cooke & Peck) Peck. On old wood of conifer; Kenora. Spores $70-90 \times 3-4 \mu$, becoming multiseptate.
- Bertia moriformis** (Tode) de Not. On old wood of *Acer Negundo* and *Alnus incana*; Norway House, Univ. Spores $36-45 \times 5-7 \mu$, fusoid, 2-celled.
- Bertiella ?botryosa** Morg. On rotted deciduous wood; Univ. Asci $70-90 \times 7-8 \mu$; spores biseriate, $28-34 \times 3-4 \mu$, 5-8 septate.
- Calosphaeria exilis** (Alb. & Schw.) Sacc. (as described in N. A. Pyrenomycetes: 247). On old bark and wood of *Populus balsamifera*; Univ. Perithecia black, shining, $110-140 \mu$ in diameter, nearly spherical then collapsing to deeply concave, seated on a whitish subiculum, bearing setae up to 50 or $60 \times 5 \mu$. Asci nearly sessile, $25-35 \times 4 \mu$, 8-spored, discharging from the perithecia in lines or masses connected at the bases; paraphyses absent or obscure; ascospores continuous, hyaline, $4-6 \times 1-1\frac{1}{2} \mu$.
- Chaetosphaeria ?atrobarba** (Cooke & Ell.) Sacc. On old Populus; Univ. Perithecia setose; spores $12-14 \times 4 \mu$, hyaline, becoming pale greenish-brown and 4-celled.
- Helminthosphaeria Clavariarum** (Desm.) Fuckel (*Rosellinia Clavariarum*). On *Clavaria cristata*; Kenora. The conidial stage *Scolecotrichum Clavariarum* (q.v.) is followed about October by the perfect stage, which consists of setose perithecia; ascospores uniseriate, continuous, brown, $10-14 \times 5-6 \mu$.

- Lasiosphaeria canescens** (Pers.) Karst. On dead *Cornus stolonifera* and *Populus*; Univ. Perithecia with thick-walled, continuous, brown, pointed hairs; spores $22-32 \times 4-6 \mu$, becoming brownish and 2-celled.
- **hirsuta** (Fr.) Ces. & de Not. Common on old wood of *Acer Negundo*, *Populus*, and *Salix*; Univ. eastward. Spores $50-65 \times 5-6 \mu$, vermiform cylindrical, becoming septate.
- **hispida** (Tode) Fuckel. On old *Populus*, etc.; Univ., Victoria Beach. Perithecia bristly; spores as in *P. hirsuta*; the two species may be synonymous.
- **ovina** (Pers.) Ces. & de Not. Common on old wood of *Betula*, *Populus*, *Salix*, etc.; one collection on *Pinus Banksiana*; Univ. to Victoria Beach and eastward. Perithecia with a whitish coat; spores continuous, vermiform, $40-56 \times 4-6 \mu$, with a short narrow prolongation as shown in Berlese's Icones.
- **spermoides** (Hoffm.) Ces. & de Not. On decayed *Populus*; Univ. Perithecia overrun with greenish hyphae; spores continuous, hyaline, biguttulate, $19-21 \times 4 \mu$.
- **strigosa** (Alb. & Schw.) Sacc. On old *Populus*; Univ. Bristles $200-325 \times 8-10 \mu$; asci c. $100 \times 10 \mu$; spores continuous, c. $28-30 \times 4 \mu$.
- **?sublanosa** (Cooke) Ell. & Ev. On old deciduous wood; Univ. Spores hyaline, becoming brownish and 2- to 4-celled, $28-34$ (or longer) $\times 5-8 \mu$.
- **viridicoma** (Cooke & Peck) Sacc. On dead *Populus*, etc.; Univ., Victoria Beach. Perithecia covered with a dense, close, yellow-green tomentum; spores $32-44 \times 7-10 \mu$, 4-celled.
- Melanomma pulvis-pyrius** (Pers.) Fuckel. Reported by Cheesman (106) from Elm Park, Winnipeg. Specimens not seen by the writers.
- Melanopsamma ?subfasciculata** (Schw.) Ell. & Ev. On old *Vitis vulpina*; Univ. Referred with doubt to Schweinitz's *Sphaeria subfasciculata* on *Vitis*. The perithecia arise from a reddish brown subiculum, and become bare, asci $150-160 \times 17-18 \mu$, clavate, 8-spored; spores $34-36 \times 8-10 \mu$, hyaline, 2-celled, each cell with 2 guttulae.
- Rosellinia ligniaria** (Grev.) Nitschke. On branches of *Prunus* sp. and *Quercus macrocarpa*; Birds Hill, Univ. Perithecia small, bristly; asci $70-100 \times 10 \mu$; spores $10-15 \times 5-7 \mu$.
- **mammiformis** (Pers.) Sacc. On old *Cornus stolonifera*, *Salix*, and *?Acer Negundo*; Univ., Man.; on *Salix*; Dysart, Sask. Perithecia sometimes confluent, double-walled; spores $18-24 \times 6-8 \mu$, brown.
- **medullaris** (Wallr.) Ces. & de Not. On old *Fraxinus*, etc.; Univ. Perithecia becoming smooth; asci c. $150 \times 10 \mu$; spores $20-25 \times 6-7 \mu$, brown.
- **parasitica** Ell. & Ev. On old *Populus* and *Symphoricarpos occidentalis*; Univ. Perithecia sometimes flattened; spores $9-12 \times 5-6 \mu$.
- **pulveracea** (Ehrenb.) Fuckel. On old *Populus tremuloides*; Univ., Man. and Saskatoon, Sask. Asci $80-110 \times 8-10 \mu$, uniseriate; spores $10-12 \times 7-8 \mu$.
- **?subcompressa** Ell. & Ev. On deciduous wood; Univ. Spores $6-8 \times 4-4\frac{1}{2} \mu$.
- Wallrothiella Arceuthobii** (Peck) Sacc. Common at Victoria Beach on the fruits of the abundant *Arceuthobium americanum* on *Pinus Banksiana*; also north of Edmonton, Alberta. Life history described and illustrated by Miss Dowding (121).
- Zignoella pulviscula** (Currey) Sacc. On *Populus* and old *Phlebia strigosozonata* on the same wood; Univ. Spores $20-25 \times 4 \mu$, hyaline, 4-celled, fusiform.
- sp. On old stump of deciduous tree; Univ. Perithecia small, about 250μ high with a small beak; asci c. $100 \times 8 \mu$, 8-spored, 2-3-seriate; spores hyaline, $28-36 \times 3-4 \mu$, 7-10-celled, pointed at the ends. No description was found to fit this multiseptate Zignoella.

Ceratostomataceae

- Ceratostoma brevirostre** (Fr.) Sacc. On decayed wood of *Populus*; Univ. Perithecia partially immersed, smooth; spores uniseriate, overlapping, $14-16 \times 4 \mu$, pale brown.

Cucurbitariaceae

- Cucurbitaria Berberidis** (Pers.) S. F. Gray. Common on branches of *Berberis Thunbergii* and *B. vulgaris*; Univ. It may be somewhat parasitic on the stems. Spores muriform, brown, $24-32 \times 11-14 \mu$.
- **?Caraganae** Karst. On branches of *Caragana arborescens*; Univ. Asci $150-200 \times 12-17 \mu$; spores $20-27 \times 9-12 \mu$. This may be *C. elongata*.
- **elongata** (Fr.) Grev. Common on stems of *Amorpha fruticosa* (*C. Amorphae* (Wallr.) Fuckel), associated with *Camarosporium Amorphae*; Univ.; on stems of *Coloneaster* sp.; Univ.

of *Eleagnus argentea* (*Cucurbitaria Caraganae* var. *Shepherdiae* Rehm, as in Breckle's Fungi Dakotenses, 306 and 477); Souris. Spores muriform, brown, $20-31 \times 9-12 \mu$. See Welch (Mycologia, 18: 60).

Cucurbitaria staphula Dearness in Manuscript. On galls on branches of *Populus balsamifera*; Beaver Creek, Buchanan, Naisberry and Pike Lake, Sask. Apparently injurious to the poplars. Similar galls are found in Manitoba, but the *Cucurbitaria* has not been detected; see *Dichaena Populi*.

Otthia Hypoxylon (Ell. & Ev.) Shear (*O. hypoxylodes* Ell. & Ev.). On old wood of *Acer Negundo*, etc.; Univ. Spores brown, 2-celled, $10-14 \times 4\frac{1}{2}-5\frac{1}{2} \mu$.

— **Symphoricarpi** Ell. & Ev. On twigs of *Symphoricarpos occidentalis*; Univ.; det. Brenckle (see Fungi Dakotenses, 98). Spores $20-25 \times 8-10 \mu$, hyaline at first.

Amphisphaeriaceae

Amphisphaeria ?albomaculans (Schw.) Cooke. On old decorticated branch of ?*Populus*; Univ. Perithecia on white areas; spores $9-14 \times 4-5 \mu$, brown, 2-celled.

— **applanata** (Fr.) Ces. & de Not. Common on surface of bark of living *Quercus macrocarpa*; Univ. Spores unequally 2-celled, the upper cell being the larger (Sacc. Sylloge, 9: 741) not the lower cell as stated by Cooke and by Ellis. Petrak (Ann. Mycol. 21: 331) makes this species the type of his new genus *Kirschsteiniella*.

— **bisphaerica** (Cooke & Ell.) Sacc. On bark of dead *Populus*; Univ. Spores $12-18 \times 6-8 \mu$, larger than given in N.A. Pyrenomycetes, but like those in Fungi Columb. 1318, on poplar.

— **incrusters** Ell. & Ev. On branches of *Abies balsamea*; Victoria Beach. Ascospores $22-28 \times 8-10 \mu$, 2-celled, brown.

Teichospora clavisporea Ell. & Ev. On dead branch of *Acer Negundo*; Univ. Spores muriform, brown, clavate, c. $33 \times 10 \mu$.

— **fulgurata** Ell. & Ev. On decorticated branches of *Populus*; Univ. Spores $14-16 \times 6 \mu$, brown, with 3 or 4 cross septa and finally 1 or 2 longitudinal septa.

— **insecura** (Ell.) Ell. & Ev. On twigs of *Salix* sp.; Humboldt, Sask.; spores brown, $20-26 \times 8-10 \mu$, with 3 to 5 cross septa and usually one longitudinal septum; a form perhaps belonging to this species on *Prunus virginiana*; Univ.; spores $16-23 \times 8-11 \mu$.

— **megastega** Ell. & Ev. On dead branches of *Salix*; Univ. Spores $31-44 \times 11-12 \mu$, with about 7 cross septa and several longitudinal septa.

— **obducens** (Fr.) Fuckel. On bark or wood of *Populus* sp., *Quercus macrocarpa*, and *Ulmus americana*; Lake of the Woods; Univ. Spores brown, $20-30 \times 8-12 \mu$, with about 7 cross septa and several longitudinal septa.

— **populina** Ell. & Ev. On decorticated *Populus*; Univ. Spores brown, $12-18 \times 6 \mu$, with about 3 cross septa and 2 longitudinal. *T. pygmaea* Ell. & Ev. and *T. kansensis* Ell. & Ev. are similar or identical.

— **pruniformis** (Nyl.) Karst., or possibly a form of the preceding species. On branches of *Populus tremuloides*; Univ. Spores $15-20 \times 6-8 \mu$.

Lophiostomataceae

Lophidium compressum (Pers.) Sacc. On twigs of *Populus*; Univ. Spores $20-28 \times 7-8 \mu$, muriform, brown.

— sp. On branches of *Symphoricarpos occidentalis*; Indian Head, Sask. Perithecia on wood or remains of bark; ascospores $20-27 \times 10-12 \mu$, commonly with seven cross-walls and one or two longitudinal walls. A *Lophidium* on *S. occidentalis* has been found also by Brenckle.

Lophiosphaeria pulveracea Sacc. On an old board (of ?*Betula*) in the woods; Univ. Spores $16-23 \times 5-7 \mu$, 2-celled, somewhat constricted at the septum.

Lophiostoma Arundinis (Fr.) Ces. & de Not. On old stems of *Phragmites communis*; Lake Dauphin and Victoria Beach; July. Spores golden-brown, rather fusoid, $28-32 \times 6-8 \mu$, mostly 5-celled.

— **erosum** Ell. & Ev. On dead branches of *Salix*; Elk Island and Univ. Perithecia immersed in the wood; spores smoky-hyaline then dark brown, c. $25 \times 8 \mu$, about 6-celled.

— **praemorsum** (Lasch) Fuckel. On twigs of *Symphoricarpos occidentalis*; Univ.; det. Dr. Brenckle. Spores $25-38 \times 5-6 \mu$, hyaline then brown, for a long time 1-septate but finally with 3 septa, pointed at the ends.

- Lophiostoma ?prominens* Peck. On twigs of *Cornus stolonifera*; Univ. Spores c. $20 \times 5 \mu$, rather immature.
- *quadrinucleatum* Karst. On branch of *Acer Negundo*; Univ. Spores $22-24 \times 7-8 \mu$.
- *sexnucleatum* Cooke. On branches of *Salix*; Univ. Spores $30-36 \times 8-9 \mu$, brown, about 6-celled.
- *triseptatum* Peck. Very common on branches of *Acer Negundo*, *Fraxinus pennsylvanica*, *Populus* spp., *Rosa* sp., *Salix* spp., *Symphoricarpos occidentalis*, *Vitis vulpina*, etc.; Univ. and no doubt everywhere. The elongate perithecia are partially sunken in the wood; spores brown, usually 3-septate, $15-22 \times 4-7 \mu$. Perhaps the same as *L. quadrinucleatum*.
- *vestitum* Peck. On dead branch of *Populus*; Univ. Perithecia gregarious or even attached together; spores $34-42 \times 8-10 \mu$, hyaline becoming yellowish, 2-celled then 4-celled.

Mycosphaerellaceae

- Mycosphaerella chimaphilina* (Sacc.) House (or *Sphaerella Chimaphilae* Ell. & Ev.). On leaves of *Chimaphila umbellata*; Victoria Beach; July-Aug. Spots dark, small, orbicular; perithecia smooth; spores $10-12 \times 2\frac{1}{2}-3 \mu$. It seems possible that the two names given above may be synonymous.
- [— *Fragariae* (Tul.) Lindau. Conidial stage only collected. See *Ramularia Tulasnei*.]
- [— *Grossulariae* (Fr.) Lindau. See *Septoria Ribis*.]
- *?Sarraceniae* (Schw.) House. The common spot on *Sarracenia purpurea* in eastern Man. may mature to this species. Only pyrenidia, with spores $3-5 \times 1 \mu$, have been found.
- *Thalictri* (Ell. & Ev.) Lindau. On leaves of *Thalictrum dioicum*; Cowan and Univ., Man.; Macdowell, Sask. The perithecia occur on white spots on living leaves, some maturing about August; spores $11-14 \times 4 \mu$, 2-celled.
- Pseudoplea Trifolii* (Rostr.) Petrak (*Sphaerulina Trifolii* Rostr., *Pleosphaerulina Briosiana* Pollacci). On leaves of *Medicago sativa*; Brandon, Man.; coll. I. L. Connors; of *Trifolium hybridum*; Canora, Sask. See Horsfall, Cornell Univ. Memoir, 130. Both collections show a few young asci on leaves of the current season.
- Sphaerella Astragali* (Currey) Cooke. On *Oxytropis Belli*; Long Point, Man., on Hudson's Bay; coll. Wm. Güssow June 29, 1932 (Can. Plant Disease Survey Rept. 1933:116, 1934). Specimens at Ottawa and in the Dearness herbarium. This and the following two species belong in *Mycosphaerella*, but have apparently not been transferred.
- *?ignobilis* Auersw. On leaves of *Hierochloa odorata*; Muenster, Sask. Perithecia $110-130 \mu$ in diameter; asci numerous, $40-50 \times 10-12 \mu$; spores $12-15 \times 4-5 \mu$, hyaline, 2-celled, scarcely constricted. This fits fairly well the fungus described on *Deschampsia (Aira) alpina* in Greenland.
- *?Pyrolae* Rostr. On leaves of *Pyrola* sp.; Victoria Beach. Ascospores slightly immature, $10-11 \times 4 \mu$, 2-celled. This also is a Greenland fungus.

Pleosporaceae

- Cerispora manitobiensis* Dearness & Bisby (71:72). On bark of dead twigs of *Lonicera canadensis*; Birds Hill. Perithecia erumpent, membranous, $170-190 \mu$; spores brown with a hyaline pointed cell at each end, $30-38 \times 5-7 \mu$, with a total of 6-8 cells.
- Didymella applanata* (Niessl) Sacc. Occasional on stems of *Rubus idaeus* var. *strigosus* in Man. The spur-blight of raspberries is not serious. The Phoma stage has been seen, but perithecia have not been sought. Koch (Phytopath. 21: 247-287) has shown that *Mycosphaerella rubina* (Peck) Jacz. is a synonym.
- *canadensis* Ell. & Ev. On dead limbs of *Populus* and *Salix*; Univ. Spores hyaline, $20-26 \times 8-10 \mu$, 2-celled.
- *lophospora* Sacc. & Speg. In bark of *Vitis vulpina*; Univ.
- *manitobiensis* Dearness & Bisby (71:73). On dead twigs of *Viburnum Opulus*; Univ. Perithecia in the cortex; asci $75-105 \times 7-10 \mu$; spores hyaline, 2-celled, fusoid and pointed, $30-42 \times 4-5 \mu$.
- Didymellina ?Iridis* (Deam.) v. Höhn. On overwintered leaves of *Iris* heavily infected with *Heterosporium* sp.; Indian Head, Sask. Ascospores 2-celled, hyaline, $18-22 \times 6-8 \mu$. These spores are considerably smaller than described. They were somewhat immature. The fungus, however, may be *D. poecilospora* McWhorter (Phytopath. 27: 136).

- Didymosphaeria decolorans* Rehm. On dead twigs of *Symphoricarpos occidentalis*; Univ.; det. Brenckle, who considers it an *Amphisphaeria*, and lists it as *A. decolorans* in *Mycologia*, 9: 277. Spores brown, $9-14 \times 4-6 \mu$.
- *diplospora* (Cooke) Rehm. On branches of *Cornus stolonifera*, *Rosa* sp., and *Vitis vulpina*; Univ. Spores $9-12 \times 4-6 \mu$. A form on *Quercus macrocarpa* has spores $8-10 \times 5-6 \mu$.
- *epidermidis* (Fr.) Fückel. On twigs of *Viburnum Lentago* and *V. Opulus*; Univ. Spores $10-15 \times 4-6 \mu$.
- *manitobiensis* Ell. & Ev., N. A. Pyrenomycetes: 732. On leaves of *Rubus idaeus* var. *aculeatissimus*, along the Minnedosa River; type collected by J. Dearness Oct. 3, 1891. The earliest known printed reference to a Manitoban fungus. Apparently only the type collection is known.
- Leptosphaeria avenaria* G. F. Weber. On *Avena sativa*, together with *Septoria Avenae*; Brandon, Man. and Saskatoon, Sask.; on old stubble of *Avena sativa*; Indian Head, Sask.
- *?Berberidis* Rich. On twigs of *Berberis vulgaris*; Univ. Asci $70-80 \times 11-12 \mu$; spores $18-26 \times 5-6 \mu$, usually 4-celled, brown. Reported also from Iowa (8: 355).
- *?borealis* Ell. & Ev. On twigs of *Cornus stolonifera* and *Viburnum Opulus*; Univ.
- *Coniothyrium* (Fückel) Sacc. Rarely seen on canes of *Rubus idaeus* var. *strigosus*; Univ., Man.; Saskatoon, Sask.
- *consimilis* Ell. & Ev. Common on *Salix* along the Red River. Spores $26-35 \times 8-12 \mu$, brown, about 8-celled. A form with membranous perithecial walls is also found.
- *culmicola* (Fr.) Karst. On old straw of *Avena sativa*, etc.; Univ., Man.; Preeceville, Sask. Spores 6-celled, the third from the top swollen.
- *culmifraga* (Fr.) Ces. & de Not. On dead stems of *Bromus inermis*; Indian Head and Saskatoon, Sask. Ostiole prominent; asci c. 100μ long, spores $25-35 \times 4-6 \mu$, 6-10-celled, golden in color. The spores are rather short for this species.
- *?culmorum* Auersw. On dead herbaceous stem; Berens River. Spores $20-26 \times 4 \mu$, 4-celled, brown.
- *doliolum* (Pers.) de Not. Common on dead herbaceous stems, including *Aster*, *Convolvulus sepium*, *Dracocephalum parviflorum*, *Helianthus annuus*, *Sonchus arvensis*, and *Urtica gracilis*; Univ., Man.; on old *Helianthus annuus* and *Lathyrus venosus*; Indian Head, Sask. Variable, typically with yellowish-brown spores $20-30 \times 4-6 \mu$, 4-celled, slightly constricted at the septa.
- *?mesoedema* (Berk. & Curt.) Ell. & Ev. On dead herbaceous stems; Univ. Perithecia erumpent; asci about $120 \times 15 \mu$, 8-spored; spores long, $40-60 \times 4 \mu$, commonly 9-celled and sometimes with the fourth cell swollen to 6μ wide, yellowish-brown.
- *?puteana* Ell. & Kellerm. On an old board in the woods; Birds Hill. Spores about $27 \times 6 \mu$, 6-8-celled.
- *pyrenopezizoides* Sacc. & Speg. On dead stems of *Artemisia biennis*; Prud'homme, Sask.; on dead herbaceous stems; Victoria Beach; apparently this species on old coniferous wood; Birds Hill, Man. The perithecia become "pezizoid" by collapsing; spores $20-24 \times 4-6 \mu$, 4-celled, sometimes with the second cell swollen. Perhaps only a form of *L. doliolum*.
- *rugosa* Dearness & Bisby (71: 74). On dead stems of *Cornus stolonifera*; Univ. Perithecia in the cortex, erumpent, making the bark rugose; asci $115-140 \times 11-15 \mu$; spores brown, 2-4-celled, constricted, $18-27 \times 6-9 \mu$.
- *subconica* (Cooke & Peck) Sacc. On dead stem of *Sonchus arvensis*; Univ. Spores c. $20 \times 6 \mu$. Perhaps only a form of *L. doliolum*.
- Metasphaeria anisometra* (Cooke & Hark.) Sacc. On twigs of *Viburnum pubescens*, and on decayed herbaceous stems; Univ. Spores $18-22 \times 5-6 \mu$, hyaline, 4-celled.
- *corylina* Ell. & Holw. Common in the bark of *Corylus* sp.; Univ. The fungus matures in early spring; asci $100-150 \times 18-27 \mu$; spores $28-34 \times 10-13 \mu$, 4-celled.
- *cumana* (Sacc. & Speg.) Sacc. On dead *Carex*; Univ. Asci $60-75 \times 9-10 \mu$; spores $22-24 \times 4\frac{1}{2}-5\frac{1}{2} \mu$, 3-4-celled. *M. carectorum* (Berk. & Curt.) Sacc. may be the same.
- *Dearnessii* Bubak. Common on living leaves of *Smilax herbacea*; Univ. Spots pale, border reddish; perithecia epiphyllous; spores $16-24 \times 3\frac{1}{2}-4\frac{1}{2} \mu$, about 4-celled.
- *?hyalospora* Sacc. On old straw of *?Triticum*; Univ. Spores $26-30 \times 3-4 \mu$, 7-8-celled, sometimes with the third cell swollen. The spores become pale brownish and the fungus should probably be called *Leptosphaeria hyalospora* Sacc., as is done in Oudemans' Enumerat. Syst. Fungorum; or it may be one of the several other species described on grasses.

- Metasphaeria leiostega** (Ell.) Sacc. On dead branches of *Pyrus baccata*, *Ribes floridum*, *Rosa* sp. and *Rubus idaeus*; Univ. Spores $14-21 \times 6-7 \mu$, usually 4-celled.
- **Polygoni-sagittati** (Schw.) Ell. & Ev. On old stems of *Polygonum*; Univ. Spores up to 18μ long, becoming 4-celled.
- **querna** Dearness & Bisby (71:74). On dead branches of *Quercus macrocarpa*; Univ. Perithecia carbonous, immersed in cortex, or almost superficial if on the bare wood; asci $90-130 \times 12-15 \mu$; spores $24-30 \times 6-8 \mu$, hyaline to pale amber, 5-6-celled.
- sp. On twigs of *Symphoricarpos occidentalis*; Univ. Spores $25-33 \times 4 \mu$, at first 2-celled, becoming 4-celled. Dr. Wehmeyer writes that it seems close to *M. Arabidis* Johans.
- Ophiobolus acuminatus** (Sowerby) Duby. On dead stems of *Artemisia biennis*; Indian Head, Sask.; on *Castilleja coccinea*; Roblin, Man. Spores $75-105 \times 2-4 \mu$, brown, 10-16-celled, sometimes with one cell near the centre swollen.
- **anguillides** (Cooke) Sacc. On old stems of *Heracleum lanatum*; Univ. Spores $100-120 \times 3-4 \mu$, pale brown, often much curved and bearing a swollen cell at one end.
- **filisporus** (Cooke & Ell.) Sacc. On old stems of *Grindelia squarrosa*; Ste. Agathe. Perithecia minute, about 60μ wide; asci cylindric, $85-105 \times 4-5 \mu$, 8-spored; spores nearly as long as the asci, less than 1μ thick.
- **fulgidus** (Cooke & Peck) Sacc. Common on dead herbaceous stems of *Aster*, *Erigeron*, *Solidago*; Univ., Brandon, Man.; on *Artemisia biennis*; Canora, Sask. The fungus matures about July on stems of the preceding year. Spores yellowish-brown, $65-100 \times 3-5 \mu$, multiseptate.
- **graminis** Sacc. Common on *Triticum aestivum* in Sask., not so common in Man.; also found as follows in Sask.: on *Hordeum jubatum*; Rama; *H. vulgare*; Annaheim, Lake Lenore; *Hierochloa odorata*; St. Gregor. The first Canadian record of this fungus is by Fraser (23), who found it in northern Sask. in 1923 on *Triticum aestivum*. It has since been studied extensively by Russell (34-38). It is a troublesome parasite of wheat in many parts of Saskatchewan, especially for the first few years after the virgin prairie is broken. It is not prevalent in older fields where crop rotation is practised. Russell reports the following hosts susceptible when artificially inoculated: *Agropyron dasystachyum*, *A. repens*, *A. Richardsonii*, *A. Smithii*, *A. tenerum*, *Bromus ciliatus*, *B. inermis*, *B. latiglumis*, *B. Porteri*, *B. Pumpellianus*, *Calamagrostis* sp., *Deschampsia caespitosa*, *Elymus canadensis*, *E. innovatus*, *Hierochloa odorata*, *Hordeum jubatum*, *Poa triflora*, *Schizachne purpurascens* (*Melica striata*) and *Secale cereale*.
- **porphyrogonus** (Tode) Sacc. On dead stems of *Cirsium arvense* and *Melilotus*; Univ. Spores $90-125 \times 1-2 \mu$.
- **trichosporus** Ell. & Ev. On straw of some cereal; Univ. Spores very narrow, $60-100$ or longer $\times \frac{1}{2}-1 \mu$.
- Phomatospora Rosae** Rehm. On stems of *Rosa* sp.; St. Norbert; of *R. ?blanda*; Univ. Ascospores hyaline, uniguttulate, $15-18 \times 8-9 \mu$. Type collected in North Dakota (see Brenckle, *Fungi Dakotenses*, 284).
- Physalospora aurantia** Ell. & Ev. On leaves of *Astragalus adsurgens*; Dubuc, Sask.; of *A. goniatus*; Biggar, Dana, Lipton and Saskatoon, Sask.; of *A. pectinatus*; Sutherland, Sask.
- **megastoma** (Peck) Sacc. On living leaves of *Astragalus ?alpinus*; Brandon, Man.; of *A. bisulcatus*; Vonda, Sask. Spores in the Man. collection $18-20 \times 8-10 \mu$, as in *P. aurantia*; but on living, unblackened leaves.
- Pleospora Harknessii** Berl. & Vogl. (*Leptosphaeria straminis* Cooke & Hark.) On dead stems of *Bromus inermis*; Saskatoon, Sask. Asci c. 75μ long; spores 6-celled, with longitudinal septa finally dividing one or two central cells.
- **herbarum** (Pers.) Rabenh. On dead branches of *Salix*; Univ. Spores brown, muriform, $25-42 \times 8-18 \mu$. Reported as "common everywhere from Greenland to Mexico" (N. A. Pyrenomycetes) but not found to be common in Man.
- **megalotheca** Tracy & Earle. On dead leaves of the current season of *Achillea millefolium*; Pilot Mound; det. C. Chupp. Accompanied by the *Alternaria* stage.
- **pustulans** Ell. & Ev. On stems of *Cornus stolonifera*; Univ.; probably this species on branches of *Amelanchier alnifolia*; St. Norbert. Spores $19-25 \times 9-11 \mu$, with 5-7 cross septa and 2-3 longitudinal septa.

- Pyrenophora Bromi** (Diedicke) Drechsler. On dead overwintered leaves and stems of *Bromus inermis*; Univ., Man.; Saskatoon, Sask. The Sask. specimens immature; the Man. specimens with bristly perithecia bearing brown ascospores $62-75 \times 24-29 \mu$, with 3 cross septa and 0-2 longitudinal septa. See *Helminthosporium Bromi*.
- **?calvescens** (Fr.) Sacc. Recorded with doubt on dead stems of *Melilotus*; Univ.
- **rugosa** Dearness & Bisby (71:75). On an old stave of a barrel in the woods; Univ. Spores $24-36 \times 11-15 \mu$, constricted near the middle, with 5-7 cross septa and longitudinal septa across most of the cells.
- **trichostoma** (Fr.) Sacc. On stubble of *Triticum aestivum*; Melfort, Sask.
- **Tritici-repentis** (Diedicke) Drechsler. Perithecia of *Helminthosporium Tritici-repentis* were collected on *Triticum aestivum* by J. E. Machacek at Assiniboia, Sask., and by P. M. Simmonds at Indian Head, Sask.
- Venturia ?compacta** Peck. On leaves of *Vaccinium canadense*; Norway House, Man.; Crooked River, Sask. Both specimens immature.
- **Dickiei** (Berk. & Broome) Ces. & de Not. On leaves of *Linnaea borealis* var. *americana*; Berens River, Minaki, Victoria Beach. Mature ascospores $12-16 \times 4 \mu$, brown, 2-celled, somewhat constricted.
- **Gaultheriae** Ell. & Ev. On leaves of *Gaultheria procumbens*; Minaki. Spores 2-celled, $10-11 \times 2\frac{1}{2}-3 \mu$, hardly mature.
- [—**inaequalis** (Cooke) Wint. See *Fusicladium dendriticum*.]
- **pulchella** Cooke & Peck. On leaves of *Chamaedaphne calyculata*; Ingolf, Kenora, and near Norway House. Spores $12-14 \times 3-4 \mu$.

Massariaceae

- Massaria conspurcata** (Wallr.) Sacc. On dead branches of *Prunus* sp.; Univ. Spores large, $70-85 \times 14-18 \mu$, 4-celled, brown. Perhaps should be referred to *M. inquinans* (Tode) Fr.
- **plumigera** Ell. & Ev. var. **tetraspora** Dearness & House. On branches of *Viburnum Opulus*; Univ. Asci 4-spored; spores $66-86 \times 15-18 \mu$, 4-celled, hyaline, sometimes becoming brownish.
- **Pyri** Otth. On branches of *Amelanchier alnifolia*; Univ., Man. and Saskatoon, Sask. Ascospores $52-75 \times 11-16 \mu$, 4-celled, brown, with 4-6 large guttae. It does not seem possible to separate these collections into *M. Pyri* and *M. vomitoria*.
- Massariella Curreyi** (Tul.) Sacc. Common on branches of *Tilia americana*; Univ. The ascospores are $36-46 \times 13-16 \mu$, each with one large and one small cell, brown, surrounded by a gelatinous envelope which swells in water. *Sphaeropsis olivacea* (q.v.) is found associated.
- ?**Pleomassaria siparia** (Berk. & Br.) Sacc. Uncertain specimens on *Amorpha fruticosa*; Univ. Spores $35-50 \times 12-20 \mu$, muriform.

Gnomoniaceae

- Gnomonia ulmea** (Schw.) Thüm. Common on leaves of *Ulmus americana*; Univ., Man. and Indian Head, Sask.; sometimes injurious. The mature ascospores on fallen leaves in the spring have not been sought.
- Gnomoniella Coryli** (Batsch) Sacc. Common on leaves of *Corylus americana* in Man., and on *C. rostrata* in Man. and Sask.
- **Coryli** var. **circinata** Dearness & Bisby. The circinate form on smaller spots on *Corylus rostrata* is not common; Univ. eastward.

Valsaceae

- Anthostoma ?adustum** (Cooke & Peck) Sacc. On dead twigs; Univ.
- **melanotes** (Berk. & Broome) Sacc. var. **Symphoricarpi** Brenckle. On dead twigs of *Symphoricarpos occidentalis*; Univ.; March; det. Brenckle (see also *Fungi Dakotenses*, 626). $12-19 \times 4-6 \mu$.
- **microsporum** Karst., or possibly *A. exudans* Peck. On old deciduous wood; Univ. Spores $5-7 \times 3 \mu$, exuding on the ostiole.
- Anthostomella ?pholidigena** (Ell.) Ell. & Ev. On twigs of *Thuja occidentalis*; West Hawk Lake. Spores $9-11 \times 4 \mu$, brown, uniseriate.

- Cryptosphaeria fissicola* (Cooke & Ell.) Sacc. On branch of *Amelanchier alnifolia*; Univ. Asci 7-10 μ wide; spores 6-10 \times 1-2 μ .
- *populina* (Pers.) Sacc. In bark of dead branches of *Populus tremuloides*; Univ., Man., Indian Head and Saskatoon, Sask. Asci c. 50 \times 8 μ ; spores 8-10 \times 2 μ .
- Diaporthe albocarnis* Ell. & Ev. Fairly common on *Cornus stolonifera*; Univ. Det. L. E. Wehmeyer, who points out in his book on *Diaporthe* (17) that the fungus is a *Leptosphaeria*.
- *Amorphae* Ell. & Ev. On dead *Amorpha fruticosa*; Univ.; det. L. E. Wehmeyer.
- *Crataegi* (Currey) Nitschke. On branches of *Crataegus chrysocarpa*; Indian Head, Sask.; coll. B. J. Sallans; det. L. E. Wehmeyer. Spores c. 16-18 \times 5 μ , constricted. Dr. Wehmeyer writes that this is the first American collection known to him.
- *eres* Nitschke. On branches of *Cornus stolonifera*; Univ. Probably present also on several other hosts.
- *Pruni* Ell. & Ev. On branches of *Prunus nigra*; Univ. 12-15 \times 3-4 μ .
- *taleola* (Fr.) Sacc. On twigs of *Quercus macrocarpa*; Univ.; June. Asci 8-spored uniseriate, 175-200 \times 15 μ ; spores 22-24 \times 10-12 μ , with a cylindrical hyaline appendage at each end, and 2 or 3 lateral appendages somewhat longer than the terminal. This is the first known American collection of this species; Wehmeyer (17) states that it is "apparently confined to Europe." The spores are exactly as illustrated by Wehmeyer, pl. XII, fig. 5, and the determination has been verified by him.
- *tessella* (Pers.) Rehm. On twigs or branches of *Salix* spp.; Univ., Man.; Prud'homme, Sask. Conspicuous because of the wart-like ectostromata; spores 45-56 \times 8-10 μ , constricted at the septum, sometimes with a short, hyaline appendage at each end.
- *?tuberculosa* (Ell.) Sacc. On twigs of *Amelanchier alnifolia*; Univ.; April. 14-16 \times 6-8 μ .
- *Viburni* Dearness & Bisby (71:76; see also Wehmeyer, 17:123). Type collected on *Viburnum Lentago*, Univ., Apr. 18, 1926; several other collections also on this host and *V. Opulus*; Univ. Known also from Iowa and New Jersey.
- Eutypa Acharii* Tul. Rather common on branches of *Populus* and *Salix*; Univ. The wood is blackened by effuse stromata; spores 6-8 \times 1½ μ .
- *flavovirescens* (Hoff.) Tul. On an old stave of a barrel in the woods; Univ.; May. Stromata green within; spores 6-8 \times 1-1½ μ .
- *lata* (Pers.) Tul. On bark or wood of *Populus tremuloides* and *Salix*; Univ., Man.; Indian Head, Sask. Produces extensive fruiting areas in the bark, sometimes on the wood; spores 7-12 \times 2 μ .
- *ludibunda* Sacc. On bark of *Pyrus baccata*; Univ. Ostioles sulcate; spores 8-11 \times 2½-3 μ , pale greenish. Perhaps this species also on *Acer Negundo*.
- *milliaria* (Fr.) Sacc. On bare wood of *Viburnum Lentago*; Univ. Spores nearly hyaline, 7-9 \times 1-1½ μ .
- Eutypella ?angulosa* (Nitschke) Sacc. On fallen branch of deciduous wood; Kenora. 6-8 \times 2 μ .
- *cerviculata* (Fr.) Sacc. On limbs of *Alnus incana*; Kenora, Vivian. 6-9 \times 1½-2 μ .
- *?Vitis* (Schw.) Ell. & Ev. On branches of *Fraxinus pennsylvanica*; Univ. 10-14 \times 2-3 μ .
- Fenestella amorphae* Ell. & Ev. On branches of *Quercus macrocarpa*; Univ. Asci 135-150 \times 12-15 μ , 4-8-spored; spores 23-28 \times 10-12 μ , brown, with about 7 cross septa and a longitudinal septum in each division.
- *phaeospora* Sacc. On branches of *Acer Negundo*, *Crataegus*, and *Populus*; Univ. Spores 35-42 \times 14-20 μ , muriform.
- *princeps* Tul. On branches of *Quercus macrocarpa*; Univ. Spores 30-40 \times 14-20 μ , multi-septate and muriform, brown, often with a hyaline appendage from one or both ends of the spore.
- Thyridium ?ambleium* (Cooke & Ell.) Sacc. On branches of *Ulmus americana*; Univ.
- *antiquum* (Ell. & Ev.) Sacc. On twigs of *Ribes floridum*; Univ. Spores 12-20 \times 6-8 μ , brown, with 3-4 cross septa and 1 or 2 longitudinal septa.
- *?canadense* Ell. & Ev. On old branches of *Crataegus*; Univ. Fits the description of *T. canadense*, except that the spores become brown.
- Valsa ambiens* (Pers.) Fr. Very common; on branches of *Alnus incana*, *Celastrus scandens*, *Cornus stolonifera*, *Corylus* sp., *Cotoneaster* sp., *Crataegus* sp., *Elaeagnus argentea*, *Fraxinus pennsylvanica*, *Prunus nigra*, *Pyrus baccata*, *Quercus macrocarpa*, *Rosa* sp., *Salix* spp., *Tamarix* sp., *Ulmus americana*, *Viburnum Opulus*; Brandon, Univ., Victoria Beach, Man.; on *Prunus*

- Besseyi*, Rosa sp. and Ulmus sp. in Sask. Spores variable on different hosts, large for a Valsa, 14-25 \times 3-5 μ in asci with 8 spores; 4-spored asci with larger spores common.
- Valsa boreella** Karst. On branches of Salix; Univ. Spores c. 10 \times 2 μ .
- **cincta** Fr. On twigs of Prunus sp.; Univ. 14-18 \times 3-4 μ .
- **cornina** Peck. On branches of *Cornus instolonea*; Saskatoon, Sask.; of *C. stolonifera*; Univ., Man. Ascospores 14-19 \times 3-4 μ ; an associated Cystospora has spores c. 6 \times 2 μ .
- **coronata** (Hoff.) Fr. On twigs of *Cornus stolonifera*; Univ. Spores small, 6-8 \times 1-1½ μ .
- **fraxinina** Peck. In bark of branches of *Fraxinus pennsylvanica*; Univ. Ascospores 12-19 \times 3-5 μ ; associated Cystospora with spores 4-6 \times 1 μ .
- **leucostoma** (Pers.) Fr. Common and sometimes apparently injurious on branches of *Amelanchier alnifolia*, *Cotoneaster* sp., *Crataegus* sp., *Prunus* spp., *Pyrus* sp.; Univ. and Morden, Man.; on *Prunus* spp., Saskatoon, Sask. 9-14 \times 2-3 μ .
- **?leucostomoides** Peck. On branches of *Corylus* sp.; Univ. As described, except that the spores are only 10-12 \times 2 μ .
- **?Menisperm** Ell. & Holw. On old stalks of *Menispermum canadense*; Univ. Immature: the Cystospora stage with spores 5-7 \times 1-1½ μ .
- **nivea** (Hoffm.) Fr. Common on branches of *Populus tremuloides*; Univ. and Victoria Beach, Man.; on *P. balsamifera*; Indian Head, Sask. The white stromata become conspicuous in the bark, long branches sometimes bearing the fungus from end to end; spores mostly 7-9 \times 1½ μ . One collection has 4-spored asci with spores 14-18 \times 3-4 μ .
- **pallida** Ell. & Ev. On branches of a cultivated Salix; Univ. An associated Cystospora has spores 5-7 \times 1½ μ .
- **?salicina** (Pers.) Fr. On branches of Salix; Univ.
- **Symphoricarpi** Rehm. On branches of *Symphoricarpos occidentalis*; Univ.; determination verified by Dr. Brenckle, who collected the type in North Dakota (see Fungi Dakotenses, 150). Spores 12-19 \times 3½-4½ μ .
- **translucens** de Not. On twigs of Salix; Univ., Man. and Saskatoon, Sask. 10-15 \times 2 μ .
- Valsella Laschii** (Nitschke) Sacc. On branches of *Prunus Besseyi*; Univ. Asci with 16-24 spores: spores 8-12 \times 2-3 μ . A Cystospora stage present (Mycologia, 18: 253) has spores 4-6 \times 1 μ .

Melanconidiaceae

- Cryptospora kansensis** Ell. & Ev. On twigs of *Symphoricarpos occidentalis*; Univ. This species has been called *Curreyella Symphoricarpi* (Rehm) Petrak and distributed by Brenckle (Fungi Dakotenses, 553). The spores are hyaline or nearly so, 17-25 \times 8-10 μ , 2-celled, sometimes becoming 4-celled.
- Cryptosporella anomala** (Peck) Sacc. On living stems of *Corylus* sp.; Univ. Asci c. 45 \times 15 μ ; spores 8-12 \times 4-6 μ . Sometimes injurious to hazel bushes.
- **Lentaginis** (Ell. & Ev.) Rehm. On twigs of *Viburnum Lentago*; Univ. 9-12 \times 1-2 μ .
- Melanconis decoraensis** Ell. On branches of *Betula alba* var. *papyrifera*; Victoria Beach; June. Associated with *Melanconium parvulum*, (q.v.). The ascospores are 18-22 \times 8-10 μ , 2-celled, hyaline, but presumably they turn brown.
- **marginalis** (Peck) Wehmeyer. On branches of *Alnus incana*; Berens River and West Hawk Lake. Spores 14-18 \times 5-7 μ , 2-celled, hyaline.
- **occulta** (Fuckel) Sacc. On branch of *Populus tremuloides*; Univ. Perithecia submerged in the bark; asci 135-150 \times 40-50 μ ; spores 40-48 \times 16-18 μ , 2-celled, with a gelatinous sheath.
- **thelebola** (Fr.) Sacc. On branches of *Alnus incana*; Berens River. Spores with an appendage at each end when young, finally unappendaged, 2-celled, 32-52 \times 7-11 μ .
- Valsaria insitiva** (Tode) Ces. & de Not. On branches of *Quercus macrocarpa* and *Populus* sp.; Univ. Spores 16-22 \times 9-11 μ , brown, 2-celled.
- **moroides** (Cooke & Peck) Sacc. On branch of *Alnus incana*; Norway House. Spores 10-14 \times 3-4 μ , brown.

Diatrypaeaceae

- Diatrype albopruinosa** (Schw.) Cooke. Very common on branches of *Corylus* spp., occasional on *Crataegus* sp. and *Prunus virginiana*; along the Red River in Man.; on *Corylus rostrata*; Saskatoon, Sask. Spores brownish, allantoid, 11-16 \times 3-4 μ .

- Diatrype albopruinosa* var. *salicina* Rehm. On branches of *Salix* sp.; Univ. See Fungi Dakotenses, 160, for a specimen from North Dakota.
- *?asterostoma* Berk. & Curt. On fallen deciduous branches (?*Viburnum*, etc.); Univ. Stroma white within, ostiole stellately cleft; spores $7-9 \times 2\frac{1}{2}-3 \mu$.
- *?bullata* (Hoffm.) Fr. On old wood of *Populus*; Univ. $7-10 \times 3 \mu$.
- *Celastri* Dearness & Bisby (71:78). On dead stems of *Celastrus scandens*; Univ. Spores mostly $11-13 \times 2\frac{1}{2}-3 \mu$, yellow-brown.
- *hochelagae* Ell. & Ev. On old *Acer Negundo*, *Ulmus americana*, etc.; Univ. Stromata conspicuous; spores $8-12 \times 2-3 \mu$, greenish.
- *stigma* (Hoffm.) Fr. Very common on branches of *Amelanchier alnifolia*, *Betula alba* var. *papyrifera*, *Crataegus* sp., *Prunus* sp., *Pyrus baccata*, *Quercus macrocarpa*, *Rosa* sp., *Salix* sp.; Norway House southward in Man.; on *Prunus melanocarpa* in Sask. Perhaps a composite species. One striking variation is in the occurrence of stromatic outgrowths which push up the dead bark above the fungus; this variation is usually found on oak, sometimes on apple. The spores are mostly $7-10 \times 1-2 \mu$.
- *tristicha* de Not. On dead stems of *Rosa*; Univ. $15-19 \times 4 \mu$.
- *tumida* Ell. & Ev. On branches of *Amorpha fruticosa*; Univ.; agrees with Fungi Columbiana, 1240, on *A. fruticosa*. $9-12 \times 3 \mu$.
- Diatrypella decorata* Nitschke. Common on branches of *Betula alba* var. *papyrifera*; Norway House, Univ. eastward. The white bark is decorated by the black erumpent stromata; asci polysporous; spores $4-6 \times 1 \mu$.
- *?discoidea* Cooke & Peck. On branches of *Viburnum Opulus*; Univ. Asci $100-120 \times 11-13 \mu$, polysporous; spores $5-6 \times 1-1\frac{1}{2} \mu$.
- *Frostii* Peck, probably. On branches of *Corylus* sp.; Univ.
- *irregularis* Cooke & Ell. On branches of *Pyrus baccata*; Univ. Spores $7-8 \times 1-1\frac{1}{2} \mu$, in asci with long stipes.
- *missouriensis* Ell. & Ev. Common on branches of *Corylus*; Univ. $5-8 \times 1-1\frac{1}{2} \mu$.
- *placenta* Rehm. On branch of *Alnus incana*; Berens River. Compared with a specimen determined by Rehm. Spores $3-4 \times \frac{1}{2}-1 \mu$.
- *quercina* (Pers.) Nitschke. On branches of *Amelanchier alnifolia* and *Crataegus* sp.; Univ. $7-11 \times 1\frac{1}{2}-2 \mu$.
- *verrucaeformis* (Ehrenb.) Nitschke. On branches of *Prunus virginiana*; Univ. $6-8 \times 1\frac{1}{2} \mu$.

Melogrammataceae

- Botryosphaeria fuliginosa* (Mong. & Nest.) Ell. & Ev. (*sensu* Ell. & Ev., N. A. Pyrenomycetes: 546.) On dead branches of *Fraxinus pennsylvanica*, *Prunus* sp. and *Vitis vulpina*; Univ.

Xylariaceae

- Daldinia concentrica* (Bolt.) Ces. & de Not. Common on *Alnus incana* and other deciduous branches; Berens River to Univ. Stromata purplish-black to brownish; spores mostly $12-14 \times 6-7 \mu$.
- *grandis* Child. On *Populus* and *Pyrus*; Swan River, Univ. Stromata often very large, dull-black; spores mostly $11-13 \times 7-8 \mu$. See Ann. Missouri Bot. Gard. 19: 456.
- *occidentalis* Child. On *Betula* sp.; Fish Lake and Saskatoon, Sask. Stromata bronze-black; spores mostly $12-13 \times 8-9 \mu$.
- Hypoxyylon fuscum* (Pers.) Fr. Common on *Alnus incana*, *Amelanchier alnifolia*, *Corylus* sp., *Viburnum Opulus*, etc.; Clear Lake, along the Red River, to Norway House, Man., and eastward; Katepwa, Sask.
- *Howeianum* Peck. On bark of *Populus*, etc., Kenora, Univ.
- *Morsei* Berk. & Curt. On *Alnus incana*, *Pyrus baccata*, and other deciduous wood; across Manitoba.
- *multiforme* Fr. Common on *Betula alba* var. *papyrifera*; Norway House to Victoria Beach.
- *pruinatum* (Klotzsch) Cooke. Abundant on trunks and branches of *Populus tremuloides*; across Man. and in the "Park belt" of Sask. It girdles and kills trees of all ages, particularly those more exposed at the edges of the "poplar bluffs"; in smaller groups of trees ten per cent may be affected. The fungus finally produces its stromata on the diseased areas; these are pruinose until old.

Hypoxylon rubiginosum (Pers.) Fr. Common on dead *Populus*, *Tilia* and other deciduous wood along the Red River. The effused stromata pass through several bright shades of red and purple before maturing.

— **serpens** (Pers.) Fr. On *Populus*, etc.; Univ. Effused over wood or stumps.

Nummularia repanda (Fr.) Nitschke. Rather common on branches of *Ulmus americana*; Univ. $10-13 \times 4-6 \mu$.

Xylaria ?acuta Peck. On decayed *Salix*, etc.; Gimli. Apex acute, sterile; spores $15-20 \times 4-6 \mu$.

— **cornu-damae** (Schw.) Berk. Common on decaying wood in coniferous areas in Man. Stromata commonly branched; spores $15-22 \times 4-6 \mu$.

— **Hypoxylon** (L.) Grev. On deciduous wood; Univ.

LABOULBENIALES

Laboulbenia flagellata Peyritsch. On *Elaphrus* sp., Beulah, Man.; Roche Percé, Sask.; det. Thaxter from specimens found by H. J. Brodie on an insect collection by J. B. Wallis.

— **Gyrinidarum** Thaxt. On elytra of *Gyrinus lugens*; Winnipeg. Collections and determination as above.

BASIDIOMYCETES

SPOROBOLOMYCETALES

Bullera alba (W. F. Hanna) Derx (*Sporobolomyces albus* Hanna, 71: 80). Type isolated from rusted straw of wheat and oats; Univ. The colonies are white to yellowish. Derx (Ann. Myc. 28: 19) erected the genus *Bullera* in recognition of the studies of A. H. R. Buller on *Sporobolomyces* (82, vol. V).

Sporobolomyces roseus Kluyver & van Niel. From straw of cereals; Univ.; from a leaf of *Nymphaea advena*; Kenora; isolations by W. F. Hanna. The colonies are pink. This and the following species are discussed and illustrated fully by Buller (82, vol. V).

— **salmonicolor** Kluyver & van Niel. Found by Dr. Hanna as a contamination in laboratory cultures at the Dominion Rust Research Laboratory, Winnipeg.

USTILAGINALES

Cintractia Caricis (Pers.) Magn. On *Carex atherodes*, Naseby, Sask.; *C. gynocrates*, Macdowell, Sask.; *C. limosa*, Lake Waskesiu, Sask.; *C. heliophila* and *C. obtusata*, Saskatoon, Sask.; *C. substricta*, Lake Waskesiu, McKague and Prince Albert, Sask.; on *C. ?aquatilis*, Norway House, Man., and on several unidentified species of *Carex* in Man., including one at Mile 412 on the Hudson's Bay Railway.

— **externa** (Griffiths) G. P. Clinton. On *Carex filifolia*; Prud'homme, Saskatoon and Sutherland, Sask.

— **subinclusa** (Körn.) Magn. On *Carex lanuginosa*; Saskatoon, Sask.; on *Carex* sp., Univ., Man.

Doassansia Alismatis (Nees) Cornu. On leaves of *Alisma Plantago-aquatica*; Dauphin, Poplar Point, Univ.

— **deformans** Setchell. On stems of *Sagittaria latifolia*; Univ. Transferred to *Doassansiopsis* by Dietel.

— **furva** J. J. Davis. On leaves of *Sagittaria latifolia*; Univ.; verified by Drs. Clinton and Zundel.

— **intermedia** Setchell. On leaves of *Sagittaria latifolia*; Norway House and Victoria Beach, Man.; on *S. arifolia*; Pike Lake, Sask.

— **Martianoffiana** (Thüm.) Schroet. On leaves of *Potamogeton heterophyllus*; Berens River; of *P. ?natans*; Norway House.

— **ranunculina** J. J. Davis. On leaves of *Ranunculus delphinifolius*; Birds Hill. Immature on July 1 but mature Aug. 11, 1927. This species is rarely found.

— **Sagittariae** (Westend.) Fisch. On leaves of *Sagittaria* sp.; Berens River; of *S. latifolia*; Clear Lake and Poplar Point, Man.; on *S. arifolia*; Beaver Creek, Sask.

Entyloma Achilleae Magn. On leaves of *Achillea millefolium*; Univ., apparently also at Minaki and Norway House. Easily overlooked on the leaves.

— **australe** Speg. On leaves of *Physalis ?lanceolata*; Melbourne; Man.; fairly common on *Solanum triflorum* in Man. and Sask.

— **Compositarum** Farl. On leaves of *Ambrosia trifida*; Morris; of *Aster ?laevis*; Reston.

- Entyloma Menispermii** Farl. & Trel. Common on leaves of *Menispermum canadense*; Univ. Hanna (199) finds the basidiospores (secondary conidia) to be uninucleate, and forcibly discharged (see Buller, 82, vol. V: 211).
- **Nymphaeae** (D. D. Cunningh.) Setchell. Rare on leaves of *Nymphaea advena*; Keewatin. Considerable search for this fungus has been made, but it has been found but once, and isolated and studied in culture on agar by W. F. Hanna.
- **polysporum** (Peck) Farl. On leaves of *Gaillardia aristata*; Univ., Virden.
- **Ranunculi** (Bon.) Schroet. On leaves of *Ranunculus Macounii*; Berens River, Victoria Beach.
- **Thalictri** Schroet. On leaves of *Thalictrum dioicum*; Dauphin, Reston, Univ.
- Graphiola Phoenicis** (Moug.) Poit. On *Phoenix canariensis* in greenhouses; Saskatoon, Sask.
- Sorosporium Panici-miliacei** (Pers.) Takah. Often injurious on *Panicum miliaceum* wherever grown in Man. or Sask.
- Sphacelotheca occidentalis** (Seym.) G. P. Clinton. On *Andropogon furcatus*; Binscarth and Onah.
- **Sorghi** (Link) G. P. Clinton. On *Holcus Sorghum*; Univ., Man. and Saskatoon, Sask.
- Tilletia caries** (DC.) Tul. (*T. Tritici* (Bjerk.) Wint.). On *Triticum aestivum* and *T. durum*; throughout areas where wheat is grown. This species was found by Hanna and Popp (201) to constitute more than 90% of the smut in durum wheat in Man. and Sask., and to be more common than *T. laevis* on *Triticum aestivum* in the northern parts of these provinces. The annual Reports of the Canadian Plant Disease Survey give data on the prevalence of these and other plant diseases. Spontaneous combustion of the oily spores has occasionally caused destruction of threshing machines, more particularly a few years ago when wooden machines were generally used. The diseased kernels contain an average of over 12,000,000 spores (Buller, 82, vol. I: 85). The violent discharge of the basidiospores (secondary conidia) was reported by Buller and Vanterpool in 1925 (103) and these authors have described and illustrated this species (82, vol. V). Hanna (199) has studied the physiology of this species and of *T. foetens*, and has made crosses between them. (See also 51 and 197-208).
- **laevis** Kühn (*T. foetens* (Berk. & Curt.) Trel. On *Triticum aestivum*, much less common on *T. durum*, in Man. & Sask. Hanna (208) isolated trimethylamine from the spores.
- Tracya Lemnae** (Setch.) Syd. On leaves of *Spirodela polyrrhiza*; Winnipeg.
- Urocystis Agropyri** (Preuss) Schroet. On leaves of Elymus, probably *E. canadensis*; Brandon; W. P. Fraser; 1917. Caused some injury to the grass.
- **Anemones** (Pers.) Wint. in Rabenh. On *Anemone patens* var. *Wolfgangiana*; Brandon to Morden, Man.; Grenfell and Wadena, Sask.
- **Cepulae** Frost. On *Allium Cepa*; Winnipeg and vicinity. First found in 1922, then in 1924 and 1925, and it is now causing some injury to onions; but it has not become serious, and no treatment of seed or bulbs has been found necessary by the growers.
- **Fischeri** Körn. On leaves of *Carex atherodes*; Dauphin; W. P. Fraser; July 15, 1919; det. H. S. Jackson.
- **Gladioli** (Requien) W. G. Smith. On cultivated Gladiolus sp.; Loverna, Sask. Apparently not previously reported from America. It was no doubt introduced with a corm from Europe.
- **granulosa** G. P. Clinton. On *Stipa comata*; Saskatoon and Sutherland, Sask. Type collected in Idaho.
- **occulta** (Wallr.) Rabenh. Occasional on *Secale cereale* in southern Man.; found also at Balcarres, Dysart, Fairlight, Indian Head, Lipton and Mortlach, Sask. It is seldom prevalent enough to necessitate treatment of grain.
- **Waldsteiniae** Peck. On *Geum triflorum*; Indian Head and Saskatoon, Sask.
- Ustilago anomala** J. Kunze. On *Polygonum cilinode*; Minaki.
- **Avenae** (Pers.) Jens. Fairly common on *Avena sativa* in Man. and Sask.; *A. fatua* developed this smut after artificial inoculation at Indian Head, Sask., in 1929 (42). Hanna and Popp (202, 252) made crosses of *U. Avenae* × *U. levis*.
- **bromivora** (Tul.) Fisch. von Waldh. Fairly common on *Agropyron tenerum* in Man. and Sask.; sometimes destructive when this grass is grown for seed, but it can be prevented by seed disinfection. Also in *Bromus ciliatus*; Saskatoon, Sask. This smut has been produced by inoculation of the following hosts in Sask.: *Agropyron dasystachyum*, *A. Richardsonii*, *Bromus latiglumis* and *B. pumpellianus*. (See 28.)

- Ustilago Hordei** (Pers.) Lagerh. Common and injurious to *Hordeum vulgare* in Man. and Sask.
- **hypodytes** (Schlecht.) Fr. On *Stipa comata*; Beaver Creek, Pike Lake, Saskatoon, Vonda and Yorkton, Sask.; on *S. viridula*, Rapid City and Treesbank, Man.
 - **levis** (Kellerm. & Swingle) Magn. (*U. Kolleri* Wille). On *Avena sativa* throughout Man. and Sask.; on *A. fatua* in the field at Alameda, Drinkwater and Frobisher, Sask., and produced on this host by artificial inoculation in the greenhouse at Saskatoon (42). Apparently more common than *U. Avenae*; fields from untreated seed may develop as much as 50% smut. Welsh (254) found that oat plants infected with smut were more heavily rusted than those without smut.
 - **longissima** (Sow.) Tul. On leaves of *Glyceria* (*Panicularia*) *grandis*; Rapid City, Man., Saskatoon, Sask.
 - **Lorentziana** Thüm. Common on *Hordeum jubatum* in Man. and Sask.; on *Elymus Macounii*, Berens River, Man. This smut is very prevalent on *H. jubatum* in some areas, e.g., at Norway House; not so common around Winnipeg. It has apparently not been recorded previously on *Elymus*, but Seymour includes it on *Sitanion*. The smut on *Elymus* agreed in all details with *U. Lorentziana*.
 - **medians** Biedenkopf. On *Hordeum vulgare* on experimental plots at Brandon; coll. W. F. Hanna, see Can. Plant Disease Survey Report for 1935: 12.
 - **neglecta** Niessl. On *Setaria glauca*; Univ.: apparently rare, although the weed host is common.
 - **nuda** (Jens.) Rostr. Common on *Hordeum vulgare* in Man. and Sask.
 - **striiformis** (Westend.) Niessl. Rarely found on *Beckmannia Syzigachne*, *Poa pratensis*; Univ., Man.; on *Phleum pratense*; near Beausejour and Univ., Man.; on *Elymus Macounii*; Saskatoon, Sask.
 - **Tritici** (Pers.) Rostr. On *Triticum aestivum* and *T. durum* in Man. and Sask. Traces of this smut can be found wherever wheat is grown, but it is seldom very injurious. (See Hanna and Popp (200, 203, 206).
 - **utriculosa** (Nees.) Tul. On *Polygonum Persicaria* in threshed wheat; Battleford, Sask. The wheat was graded "smutty." A similar case is reported by Aamodt and Malloch (Can. J. Research, 7: 578) from Alberta.
 - **Zeae** (Beckm.) Ung. On *Zea Mays*; across southern Man. and at Indian Head and Saskatoon, Sask.; on *Z. Mays* var. *japonica*; Duck Lake, Sask.; especially injurious to *Z. Mays* var. *rugosa* (Sweet corn) in Man.

UREDINALES

Melampsoraceae

- Chrysomyxa Arctostaphyli** Diet. III on leaves of *Arctostaphylos uva-ursi*; Berens River and Victoria Beach, Man.; Duck Lake and Lake Waskesiu, Sask.
- **Cassandrae** (Peck & G. W. Clint.) Tranz. II, III on leaves of *Chamaedaphne calyculata*; Berens River. This is the most northerly record for North America.
 - **Ledi** (Alb. & Schw.) de Bary. O, I on *Picea mariana*; Prince Albert, Sask.; II, III on *Ledum groenlandicum*; Berens River and Vivian, Man., Prince Albert, Sask. This species appears to be less injurious on *Picea* than the next. The hypophyllous uredia are not always easily found on *Ledum*. The first American cultures were made by Fraser.
 - **ledicola** (Peck) Lagerh. O, I on *Picea canadensis*, Norquay, Prince Albert and Speddington, Sask.; on *Picea mariana*; Minaki to Norway House and northward in Man.; Prince Albert, Sask.; II, III on *Ledum groenlandicum* growing beneath or near the affected spruces. This rust is often injurious to spruces in northern Man. and in Prince Albert National Park, Sask. Dr. P. H. Gregory found the spruces yellow with rust from The Pas to Churchill, Man., in 1934. This rust was first cultured by Fraser, in 1910 in Nova Scotia.
 - **Pyrolae** (DC.) Rostr. O, I on cones of *Picea canadensis*, Man. (listed in Arthur's Manual, specimen not available in Man.) and cultured in Sask.; II, III on *Pyrola asarifolia*; Duck Lake and Saskatoon, Sask.; on *P. rotundifolia*; Komarno and Univ., Man. This rust was first cultured by Fraser, in Nova Scotia in 1911; and in June, 1924, telial material on *Pyrola asarifolia* from Duck Lake, Sask., was used to inoculate *Picea canadensis* at Saskatoon, aecia appearing on the cones in August.

- Coleosporium Solidaginis** (Schw.) Thüm. O, I on *Pinus Banksiana*; Elk Island, Man., Macdowall and Speddington, Sask.; II, III on *Aster cordifolius*, *A. ericoides*, *A. lateriflorus*, *A. Lindleyanus*, *A. novae-angliae*, *A. paniculatus*, *A. salicifolius* and *A. umbellatus* in Man. and *A. laevis* in Sask.; on *Callistephus chinensis* in Man.; on *Solidago canadensis* and *S. serotina* in Man. and Sask.; on *S. gilvocanescens* and *S. multiradiata* in Man. This rust is very abundant in damp seasons, and spreads far from pines by urediospores developed from overwintered mycelium. Efforts to obtain the full host range have not been made by the writers.
- **Viburni** Arth. II, III on *Viburnum Lentago*; Univ. This rust could be found, with a little search, from Aug. to Oct., 1932, at various places around the University woods. It has not been found elsewhere in western Canada, but occurs in eastern Canada.
- Cronartium Comandrae** Peck. O, I on branches of *Pinus Banksiana*; Speddington, Sask.; coll. John Laycock, and Macdowall, Sask.; II, III on *Comandra livida*, Norway House, Man.; on *C. pallida*; across northern Man., in Zones 3 and 4 in Sask.; and at Peace River and Tapscot, Alberta.
- **Comptoniae** Arth. O, I on branches of *Pinus Banksiana*; Beausejour; det. I. L. Connors, and Kenora; II, III on *Myrica gale*; Ingolf and Kenora.
- **Quercuum** (Berk.) Miyabe. O, I on *Pinus* sp., Morden; on *P. Banksiana* in Alberta, and at Macdowall, Sask.
- Hyalospora Polypodii** (Pers.) Magn. II on *Cystopteris (Filix) fragilis*; Saskatoon, Sask. Fraser and Connors (25) report that the rust persists in a ravine with no conifers near.
- Melampsora Abieti-capraearum** Tubeuf. O, I on *Abies balsamea*; Lake Waskesiu, Sask.; II, III on *Salix cordata*; Univ., Man.; on *S. candida*; Attica and Watson, Sask.; on *Salix* spp. across Man., common along the Hudson's Bay railway, and at Humboldt and Sifton, Sask. This rust is apparently more common than *M. Bigelowii* in Man. The first American cultures were made by Fraser.
- **Bigelowii** Thüm. O, I on *Larix laricina*; Birds Hill, Man.; II, III on *Salix amygdaloides*; St. Norbert, Man.; on *S. ?herbacea*; Churchill, Man.; coll. P. H. Gregory; probably this rust on *Salix* spp. at Mervin, Saskatoon and Yorkton, Sask.
- **Lini** (Pers.) Lév. II, III on *Linum Lewisii* in Man. and Sask.; on *L. rigidum*; Saskatoon, Sask.; O, I, II, III on *Linum usitatissimum* across Man. and Sask., and sometimes injurious. No definite records of aecia are available except on *L. usitatissimum*.
- **Medusae** Thüm. II, III on *Populus balsamifera*; Saskatoon, Sask.; on *P. deltoides*; Rosthern, Sask.; on *Populus* spp. in Man. and Sask. This rust is sometimes injurious on "Russian Poplars" and other cultivated forms.
- **occidentalis** Jackson. II, III on *Populus balsamifera*; Saskatoon, Sask.; on *Populus* sp.; Indian Head, Sask. These collections are assigned to this species with some doubt.
- Melampsorella Cerastii** (Pers.) Schroet. O, I (*Peridermium coloradense*) on *Picea canadensis*; Norway House and Victoria Beach, Man., Lake Waskesiu, Cypress Hills and Prince Albert, Sask.; on *P. mariana*; along Hudson's Bay Railway, Man. and Prince Albert, Sask.; II, III on *Cerastium arvense*; Brandon, Man.; Rosetown (coll. T. N. Willing) and Saskatoon, Sask. The rust forms large witches' brooms on spruces; the pycnia are abundant in spring, secrete drops of liquid, and have a strong odor suggesting *Zygadenus* or *Dictyophora*.
- Melampsoridium betulinum** (Pers.) Kleb. II, III on *Betula* sp.; Treesbank; coll. S. Criddle. The one collection was made Oct. 6, 1922.
- Pucciniastrum Agrimoniae** (Schw.) Tranz. II on *Agrimonia gryposepala*; Treesbank, Victoria Beach eastward, Man.; Edmonton, Alberta. The rust evidently lives over winter as urediospores or mycelium.
- **arcticum** (Lagerh.) Tranz. II, III on *Rubus acaulis*; Sutherland, Sask.; on *R. triflorus* across Man. and at Kingsmere Lake and Lake Waskesiu, Sask.; probably this rust on *R. arcticus* in Manitoba.
- **Goeppertianum** (Kühn.) Kleb. O, I on *Abies balsamea*; Lake Waskesiu, Sask.; III on *Vaccinium Vitis-idaea*; Lake Waskesiu, Sask.; on *V. sp.* (probably *V. Vitis-idaea*) Minaki to Victoria Beach, Man.
- **Potentillae** Komarov. II on *Potentilla tridentata*; Berens River, Norway House, and along the Hudson's Bay Railway, Man.
- **pustulatum** (Pers.) Diet. O, I on *Abies balsamea*; Alberta (recorded in Arthur's Manual); II, III on *Epilobium adenocaulon*; Norway House and Victoria Beach, Man., Saskatoon,

Sask.; on *E. angustifolium*; Minaki to Norway House, Man., Elfros, Saskatoon and Prince Albert, Sask., Dunvegan and Peace River, Alberta; on *Godetia* sp.; Univ., Man., Saskatoon, Sask. Cultures were first made in America by Fraser.

Pucciniastrum Pyrolae (Pers.) Schroet. II on *Pyrola asarifolia*; Treesbank and Winnipeg, Man., Wynyard, Sask.; on *P. chlorantha*; Treesbank, Man.; coll. E. Criddle; on *P. elliptica*; Beaver Creek and Saskatoon, Sask.; on *P. rotundifolia*; Univ., Man.

— **sparsum** (Wint.) Fisch. II, III on *Arctostaphylos rubra*; Point Churchill; coll. Wm. C. Güssow; June 1932 (Can. Plant Disease Survey Rep. for 1932: 100): found by Dr. M. Newton to be common on this host (or *A. alpina*?) at Churchill in Aug., 1936. These records extend far to the eastward the range of this rust.

Uredinopsis mirabilis (Peck) Magn. O, I on *Abies balsamea*; Minaki.

— **Struthiopteridis** Störmer. O, I on *Abies balsamea*; Lake Waskesiu, Sask.; II rather common on *Pteretis nodulosa*; Univ., Man.; on *Athyrium* (*Asplenium*) *Filix-femina*; Rennie, Man.; det. I. L. Connors. Aecia were present on *Abies balsamea* above the *Athyrium*. Fraser first connected the rust on *Abies* and *Pteretis* by cultures.

Pucciniaceae

Gymnoconia Peckiana (Howe) Trotter. O, I on *Rubus acaulis*; Sutherland, Sask.; on *R. arcticus*; Mervin, Sask.; coll. W. E. Lake; on *R. triflorus* across Man. Telia have not been noted, but the aeciospores were found to germinate with germ tubes.

Gymnosporangium aurantiacum Chev. O, I on *Pyrus* (*Sorbus*) *americana*; Minaki to Norway House, Man.

— **Betheli** Kern. O, I on *Crataegus chrysocarpa*; Estevan, Sask.; coll. J. W. Scannell; on *Crataegus* sp.; Sidney, Man.; det. I. L. Connors.

— **clavariiforme** (Jacq.) DC. O, I on *Amelanchier alnifolia*; Holmfild and Virden, Man.; possibly this species on *Crataegus chrysocarpa*; Saskatoon, Sask.

— **clavipes** Cooke & Peck. O, I on *Amelanchier alnifolia*; Berens River and Victoria Beach, Man., Saskatoon, Sask.; on *Crataegus* sp., Winnipeg and Virden, Man.; on *Pyrus* sp. (crab apple); Winnipeg; coll. C. W. Lowe; det. I. L. Connors; III on *Juniperus communis*; Victoria Beach, Man.; on *J. sibirica*; Saskatoon, Sask.

— **corniculans** Kern. O, I on *Amelanchier alnifolia*; Birds Hill and Winnipeg westward, Man., Indian Head and Saskatoon, Sask.; III on *Juniperus horizontalis* in western Man. and common in Saskatchewan.

— **?globosum** Farl. O, I on *Crataegus* sp. and III on *Juniperus horizontalis* in Sask.; det. I. L. Connors.

— **juvenescens** Kern. O, I on *Amelanchier alnifolia*; western Man. and Indian Head and Saskatoon, Sask.; III on *Juniperus horizontalis*; Saskatoon and Sutherland, Sask. This rust produces witches' brooms on the Creeping Juniper. Cultures were made by Fraser (24) with Sask. material.

— **Nelsoni** Arth. O, I on *Amelanchier alnifolia*; Victoria Beach; det. J. C. Arthur.

Nyssopsora clavellosa (Berk.) Arth. III common on *Aralia nudicaulis* from Minaki and Univ., Man. eastward, northward, and westward into northern Sask.

Phragmidium Andersoni Shear. III on *Potentilla fruticosa*; Birds Hill and Univ., Man., Lake Waskesiu, Pike Lake and Prince Albert, Sask.

— **?disciflorum** (Tode) J. F. James. II, III on *Rosa* spp. cult., Morden and Univ. The fungus seemed to fit this species, but it may have been a species developing normally on wild roses.

— **Ivesiae** Syd. O, I, II, III on *Potentilla bipinnatifida*; Virden, Man.; on *P. Nuttallii*; Cypress Hills, Sask.; on *P. spp.*; Mervin and Saskatoon, Sask., Edmonton and Peace River, Alberta.

— **?montivagum** Arth. O, I, II, III on *Rosa blanda*; Brandon and Virden, Man.; on *Rosa* sp.; Swift Current, Sask. The host and range make these determinations somewhat doubtful. Arthur recorded this species from Manitoba in the N. A. Flora, but in his Manual does not list it in Canada east of Alberta.

— **Potentillae** (Pers.) Karst. O, I, II, III on *Potentilla bipinnatifida*, *P. glabrella*, *P. hippiana*, *P. pennsylvanica*, *P. strigosa* and other species across Man., Sask. and Alberta to Peace River. This rust is very common and often conspicuous on the prairies.

— **Rosae-acicularis** Liro. II, III on *Rosa acicularis*; Norway House, Man.; on *R. ?Macounii*; Pike Lake, Sask.; on *Rosa* spp.; Melfort, Sask., and Edmonton, Alberta.

- Phragmidium Rosae-arkansanae** Diet. II, III on *Rosa* spp.; Elfros, Regina Beach and Saskatoon, Sask., Edmonton and Peace River, Alberta.
- **rosicola** (Ell. & Ev.) Arth. III on *Rosa* sp.; Saskatoon, Saskatchewan. This unusual rust is seldom found. It is recorded on *R. suffulta* in Alberta, and on *R. Engelmannii* in Montana and Nebraska. The teliospores are one-celled.
- **Rubi-idaei** (DC.) Karst. O, I, II, III on *Rubus melanolasius* in Sask.; on *R. idaeus* var. *strigosus* at Brandon and Treesbank, Man.
- **speciosum** (Fr.) Cooke. O, I on *Rosa* sp.; Saskatoon, Sask.; III on *R. Macounii*; Indian Head, Sask., and on *Rosa* spp., cult. and wild, across Man. and in Sask. The caulicolous telia are often conspicuous on roses.
- Pileolaria Toxicodendri** (Berk. & Rav.) Arth. II, III on *Rhus Toxicodendron*; Brandon, Treesbank and Winnipeg. Only one collection has been made in eastern Man., despite considerable search.
- Puccinia Absinthii** (Hedw. f.) DC. II, III on *Artemisia cana*; Asor, Kerrobert and Luseland, Sask.; on *A. frigida*; Saskatoon, Sask.; on *A. gnaphalodes*; Dauphin, Kenora and Univ., Man. This rust is doubtless present across the prairies on several species of *Artemisia*.
- **amphigena** Diet. O, I on *Maianthemum canadense*; Prince Albert, Sask.; on *Nemexia (Smilax) lasioneuron*; Bjorkdale, Pike Lake and Saskatoon, Sask.; on *Smilacina stellata*; Prince Albert, Sask.; on *Smilax herbacea*; Birds Hill, Man.; II, III on *Calamovilfa longifolia*; common in western Man. and across Sask. Field evidence at Prince Albert clearly indicated that the stages on *Maianthemum canadense* and *Smilacina stellata* were connected with those on *Calamovilfa longifolia*.
- **Andropogonis** Schw. var. **micropuncta** [Ell. & Ev.] Arth. O, I on *Castilleja sessiliflora*; Indian Head, Sask.
- **Andropogonis** var. **Onobrychidis** [Burr.] Arth. O, I on *Petalostemum candidum* and *P. purpureum*; Birds Hill, Man.
- **Andropogonis** var. **Pentstemonis** [Schw.] Arth. O, I on *Pentstemon acuminatus*; Brandon, Man.; on *P. albidus*; Indian Head and Katepwa, Sask.; on *P. eriantherus*; Neudorf, Sask.; on *P. nitidus*; Saskatoon and Sutherland, Sask.; II, III on *Andropogon scoparius*; Binsearth, Man. and Saskatoon, Sask. Cultures with Sask. material were made by Fraser (24). *P. Ellisiana* on *Andropogon* has urediospores more verrucose and thicker walled, and teliospores somewhat wider.
- **Andropogonis** var. **polygalina** [Peck] Arth. O, I on *Polygala Senega*; Brandon. A heavy infection was found on July 1, 1928. This record extends the range considerably to the west and north.
- **Andropogonis** var. **pustulata** [Curt.] Arth. O, I on *Comandra pallida*; Morden, Winnipeg; on *C. umbellata*; Birds Hill, Winnipeg.
- **Anemones-virginianae** Schw. III on *Anemone canadensis*; Univ., Man. and Beaver Creek, Sask.
- **Angelicae** (Schum.) Fuckel. II on *Zizia aurea*; Brandon; coll. I. L. Connors; III on same host at Killarney. The II spores are rather small ($23-30 \times 20-23 \mu$, fide I. L. Connors). The Killarney specimen may be *P. Ziziae* (q.v.): the telia are mostly hypophyllous, the spores up to $48 \times 24 \mu$, spore wall about 2μ thick, smooth so far as observed. *P. Angelicae* is not known elsewhere on *Zizia* in North America.
- **angustata** Peck. O, I on *Lycopus lucidus* var. *americanus* (*L. asper*); Sutherland, Sask.; on *Mentha glabrior*; Brandon and Dauphin, Man.; II, III on *Eriophorum angustifolium*; Sutherland, Sask.; on *Scirpus atrovirens*; Brandon, Man.; on *S. cyperinus*; Minaki, western Ont.; on *S. microcarpus*; Brandon, Man. and Pike Lake, Sask. Cultures were made by Fraser (20, 24). Unless care is taken, the aecia on *Mentha* may be referred to *P. Menthae*.
- **anomala** Rostr. II, III on *Hordeum vulgare*; Man. and Qu'Appelle, Sask. A trace of leaf rust of barley was collected at Univ., Man. in 1922. It was not found again until 1927, when it was prevalent in eastern and southern Man. It was common in 1930, and has occurred now and then since 1930; but it does not cause a serious disease of barley in western Canada.
- **Antirrhini** Diet. & Holw. II common on *Antirrhinum majus* across Man. and at Estevan, Regina and Saskatoon, Sask. Snapdragon rust was noted by gardeners in the Winnipeg area in 1919; some of the rust may perhaps have been present for a year or two before. The

- first collection known in the prairie provinces was made in the Univ. greenhouse, Winnipeg, on Mar. 30, 1920. *P. Antirrhini* soon spread over Man., and since 1925 has been found in Sask. It is often ruinous to snapdragons.
- Puccinia Arenariae** (Schum.) Wint. III on *Arenaria* (*Moehringia*) *lateriflora*; Chamberlain and Lake Waskesiu, Sask.; on *Stellaria longifolia*; Indian Head, Sask.; on *S. longipes*; Vonda, Sask.
- **?areolata** Diet. & Holw. This rust is reported in Arthur's Manual, etc., on *Caltha leptosepala* from Sask. The collection was made at Prince Albert, Sask.; but it now appears doubtful that the host is really *C. leptosepala*, and it is also doubtful that the rust is *P. areolata*.
- **argentata** (Schultz) Wint. III on *Impatiens biflora*; Speddington, Sask.; coll. John Laycock.
- **Aristidae** Tracy. O, I on *Chenopodium album* and *Plantago eriopoda*; Morden, Man.; on *Lappula echinata*, Deloraine, Man. (Can. Plant Disease Survey 1933: 114; specimen not at Univ., Man.; apparently the first record on this species); and in Sask. as follows: on *Atriplex* sp.; Saskatoon; on *Chenopodium album*; Assiniboia, Cedoux, Indian Head and Quill Lake; on *Erysimum cheiranthoides*; Weyburn; on *Glauz maritima*; Battleford, Bruno, Saskatoon, Undora; on *Lepidium* ?*Fletcheri*; Cedoux; on *Plantago eriopoda*; Dundurn and Saskatoon (also at Vegreville, Alberta); on *Polygonum erectum*; Melaval; on *P. neglectum*; Grenfell; on *Sarcobatus vermiculatus*; Beverley and Shaunavon; on *Sisymbrium altissimum*, *S. ?canescens*, and *Thlaspi arvense* at Cedoux; on *Triglochin maritima*; Grenfell and Saskatoon. This rust has also been collected on *Spinacea oleracea* at Craigmyle, Alta. II, III on *Distichlis stricta* (*D. spicata*); Univ., Man. and westward across Sask. This interesting rust is common on or near alkaline areas in the prairies. Its wide range of aecial hosts doubtless includes several plants in Man. and Sask. in addition to those given. The rust has been cultured by Fraser (22, 24) on *Glauz maritima* and *Plantago eriopoda*.
- **Asparagi** DC. O, I, II, III on *Asparagus officinalis*; across Man. and at Indian Head and Saskatoon, Sask. This rust sometimes causes injury to Asparagus.
- **Asteris** Duby. III on *Aster cordifolius*; Minaki, western Ont.; on *A. Lindleyanus*; Univ., Man.; on *A. multiflorus*; Beulah and Virden, Man.; on *A. novae-angliae*; Brandon, Man.; on *A. laevis*, Indian Head, Sask.; on *Aster* spp.; Broadview, Indian Head and Saskatoon, Sask.
- **atrofusca** (Dudley & Thompson) Holw. O, I on *Artemisia biennis*; Broadview, Sask.; on *A. camporum*; Prince Albert, Sask.; on *A. glauca*; Dana, Sask.; on *A. gnaphalodes*; Oak Lake and Treesbank, Man., Indian Head, Sask., Morrin, Alberta; on *A. Purshiana*; Lanigan, Sask.; on *Artemisia* spp. in Sask.; II, III on *Carex Douglasii*; Ste. Rose, Man.; on *C. filifolia* and *C. sp.*; Saskatoon, Sask.; on *C. praegracilis*; Brandon, Man. This western rust is probably common in damp seasons.
- **atropuncta** Peck & G. W. Clint. III on *Zygadenus elegans*; Muenster, St. Gregor and Saskatoon, Sask. The host is given in Arthur's manual as *Z. chloranthus*. The range of this rust probably includes Man., but it has not yet been collected there.
- **Bardanae** (Wallr.) Corda. II, III on *Arctium minus*; Emerson, Univ. and Westbourne, Man. This rust is common along the Red River.
- **Calthae** Link. II, III on *Caltha palustris*; Berens River, Rennie and Victoria Beach, Man. *P. Calthae* is not uncommon in eastern Man. It is distinguished from *P. calthicola* by having smooth, narrower teliospores.
- **calthicola** Schroet. II, III on *Caltha palustris*; Clear Lake to Dauphin, Man.; Lake Waskesiu, Sask. This species has been found by the writers only in western Man. and northern Sask.
- **Caricis** (Schum.) Schroet. var. **grossulariata** Arth. O, I on *Ribes floridum*, *R. Grossularia*, and *R. oxyacanthoides* in Man. and Sask.; on *R. nigrum* and *R. setosum* in Sask.; II, III on *Carex* spp. in Man. and Sask. This rust is common on wild *Ribes* spp. and may cause injury to cultivated species when sedges grow near or amongst them. The species of *Carex* infected have not yet been determined in western Canada, except *C. durifolia*, which is listed in the N. A. Flora, 7: 355 from Man. as a host for the form with large urediospores formerly called *P. eminens*.
- **Caricis** var. **urticata** (Kern) Arth. O, I on *Urtica gracilis* across Man., and as far north as Point Churchill; coll. Wm. Güssow; on *U. Lyallii* in Sask. and at Olds, Alberta; II, III on *Carex vesicaria*; Dauphin, Man. and Pike Lake, Sask.; on *Carex* spp. in Man. and Sask. The names for the species of *Urtica* given here are somewhat uncertain.

- Puccinia Caricis-Shepherdiae** J. J. Davis. O, I on *Elaeagnus argentea* and *Shepherdia canadensis* in Man. and Sask.; on *E. angustifolia* and *S. argentea* in Sask.; on *E. argentea* also at Morrin, Alberta; II, III in Sask. as follows: on *Carex atherodes*; Pike Lake and Saskatoon; on *C. lanuginosa*; Saskatoon; on *C. stricta*; Battleford and Sutherland; on *C. vesicaria*; Pike Lake. Fraser and Ledingham (26) extended Davis' culture work with this species.
- **Cicutae** Lasch. O, I, II, III on *Cicuta occidentalis*; Lake Waskesiu, Sask.; II, III on the same host; Saskatoon, Sask.; probably also on this host, although recorded as *C. maculata*, at Brandon, Man. This rust is apparently not common.
- **Circaeae** Pers. III on *Circaea alpina*; Norway House to Victoria Beach, Man., Lake Waskesiu and Tisdale, Sask. This rust is often abundant in beds of *Circaea*.
- **Cirsii** Lasch. II, III on *Cirsium Flodmanii* in western Man. and in Sask.; on *C. ?muticum*; Clear Lake, Man.; on *C. undulatum*; Griswold and Treesbank, Man.; on *Cirsium* spp.; St. Gregor, Sinteluta and Saskatoon, Sask.
- **Comandrae** Peck. III on *Comandra livida*; Norway House, Man.; on *C. pallida*; Turtle Lake, Sask.
- **conglomerata** (Strauss) Schmidt & Kunze. III on *Petasites palmatus* from southeastern Man. northwestward into northern Sask. This rust is often common where the host is found.
- **Convolvuli** (Pers.) Cast. O, I, II, III on *Convolvulus sepium*; Neepawa and Univ.
- **coronata** Corda. O, I on *Elaeagnus argentea*, *Rhamnus alnifolia*, *R. cathartica* and *Shepherdia canadensis* in Man. and Sask.; II, III on *Avena sativa*, *Beckmannia Syzigachne*, *Bromus ciliatus* and *Calamagrostis canadensis* in Man. and Sask.; on *Agropyron tenerum*, *Avena fatua*, *Bromus Porteri*, *B. Pampellianus*, *Calamagrostis elongata*, *C. inexpectata* (*C. montanensis*), *Deschampsia caespitosa*, *Elymus canadensis* and *Scolochloa festuacea* in Sask., most of them having been collected at Saskatoon. This species has been divided into several races based on infection capabilities. The race on oats, *P. coronata Avenae*, is often injurious. Cultures by Fraser (24) and Fraser and Ledingham (27) show that four races or varieties occur in the prairie provinces; *P. coronata Avenae* (see 249, 250), *P. coronata Calamagrostis*, *P. coronata Bromi*, and *P. coronata Elaeagni*.
- **Crandallii** Pammel & Hume. O, I common on *Symphoricarpos occidentalis* across Man. and Sask., II, III on *Festuca ovina*; Saskatoon, Sask. The telial stage is probably also common, but is inconspicuous.
- **Cypripedii** Arth. & Holw. III on *Cypripedium parviflorum*; St. Gregor, Sask. This rare rust is apparently known in Canada from this one collection only.
- **Dayi** G. W. Clint. III on *Steironema ciliatum*; common in Zone 3 in Sask.; collected also at Edmonton, Alberta; not yet found in Man.
- **Distichlidis** Ell. & Ev. O, I on *Glauz maritima*; Saskatoon, Sask.; on *Steironema ciliatum*; Morden and Univ., Man., Kenosee and Yorkton, Sask.; II, III on *Spartina gracilis*, *S. pectinata* and *S. sp.* in Sask.; on *S. pectinata*; Waskada, Man. Cultures were made by Fraser (22) on *Glauz maritima*. Some of the collections of aecia on *Steironema* may belong to *Uromyces acuminatus* var. *Steironematis* (q.v.).
- **Douglasii** Ell. & Ev. O, I, III on *Phlox Hoodii*; Carmel, Dana, Katepwa and Saskatoon, Sask. The telial stage has been found twice at Saskatoon.
- **Drabae** Rudolphi. III on *Draba* sp.; Cape Merry peninsula at Fort Churchill, northern Man.; collected 1929 by F. Johansen; specimen sent to I. Jørgstad, who reported by letter.
- **Eatoniae** Arth. III on *Sphenopholis obtusata*; Prince Albert and Saskatoon, Sask. This is probably the variety *Ranunculi Mains*; aecia on *Ranunculus ?abortivus*, Lac du Bonnet, Man., may possibly belong to this rust.
- **Eleocharidis** Arth. O, I on *Eupatorium purpureum* var. *maculatum* and II, III on *Eleocharis* sp.; Brandon, Man. This rust was collected in 1917 by W. P. Fraser, and has not been encountered since.
- **Ellisiana** Thüm. O, I on *Viola neprophylla*; Saskatoon, Sask.; on *V. spp.*; Eden and Winnipeg, Man., Saskatoon and Sutherland, Sask.; II, III on *Andropogon scoparius*; Creelman, Langham, Saskatoon and Sutherland, Sask. The aecia are more delicate than those of *P. Violae*, and are borne on pale yellow spots; see note under *P. Andropogonis* var. *Pentstemonis* for differences in II and III on *Andropogon*.

- Puccinia extensicola** Plowr. var. **Asteris** (Thüm.) Arth. O, I on *Aster multiflorus* and *A. spp.*; common across Man. and Sask.; II, III on *Carex* spp. The aecia appear long before the asters bloom, making determination of host difficult; the abundant rusts on sedges have not yet been disentangled in Man. and Sask.
- **extensicola** var. **hieraciata** (Schw.) Arth. O, I on *Hieracium scabriusculum* and *Lactuca pulchella* in Man. and Sask.; on *L. sativa*; occasional at Brandon and Winnipeg, Man. and at Saskatoon, Sask.; on *Prenanthes alba* in Man.; on the following hosts in Sask.: *Agoseris glauca* and *A. sp.*; *Crepis glaucella* at Beaver Creek; *C. runcinata* at Sutherland; *C. sp.* at Saskatoon and Sutherland; *Lygodesmia juncea* at Saskatoon; *Prenanthes racemosa* at Annaheim and St. Gregor; *Senecio columbianus* at Saskatoon; II, III on *Carex Sprengelii* at Saskatoon, and on *Carex* spp. in Man. and Sask.
- **extensicola** var. **Oenotherae** (Mont.) Arth. O, I on *Epilobium angustifolium*; Bowsman, Man., Kelliher and Melfort, Sask.; on *Oenothera biennis*; Univ. to Victoria Beach, Man., Balcarres, Sask.; on *O. serrulata*; Treesbank, Man.; II, III on *Carex Sartwellii*; Brandon, Man.
- **extensicola** var. **Solidaginis** (Schw.) Arth. O, I on *Solidago nemoralis*; Treesbank, Man.; on *S. serotina*; Indian Head, Sask. and Treesbank, Man.; on *S. rigida* at Brandon and Treesbank, Man.; common on *Solidago* spp. in Man. and Sask.; II, III on *Carex* spp.
- **Gentianae** (Strauss) Link. II on *Gentiana affinis*; Englefeld and Spy Hill, Sask.; on *G. interrupta*; Wrightville, Sask.
- **gigantea** Karst. III on *Epilobium angustifolium*; a little found at Clear Lake, Man.; not uncommon at Norway House, where it reaches its most easterly known range in North America.
- **glumarum** (Schmidt) Erikss. & Henn. II, III on *Aegilops cylindrica*, *Agropyron* spp. and especially on *Hordeum jubatum* in Sask.; on *Triticum aestivum* at Alsask, Horizon, and Ponteix, Sask.; on *Hordeum vulgare* and several other hosts in Alberta. Stripe rust is common in Alberta, and extends into Sask., especially in the western half, although it has been collected as far east as Whitewood, 102° W. Climatic conditions apparently have kept it from reaching Manitoba. Considerable study has been given to this rust in Alberta and Man. (238), with lists of hosts found susceptible by inoculation.
- **graminis** Pers. O, I on *Berberis aquifolium* (cult.); Indian Head, Sask.; on *B. vulgaris* across southern Man. and Sask. before the common barberry was more or less completely exterminated in 1918 and subsequently; II, III common on *Agropyron cristatum*, *A. dasystachyum*, *A. repens*, *A. Richardsonii*, *A. Smithii*, *A. tenerum*, *Agrostis hyemalis*, *Avena fatua*, *A. sativa*, *Bromus hordeaceus*, *Elymus canadensis*, *E. dahuricus*, *E. Macounii*, *Hierochloa odorata*, *Hordeum jubatum*, *H. vulgare*, *Phalaris arundinacea*, *Secale cereale*, *Triticum aestivum*, *T. compactum*, *T. dicoccoides*, *T. dicoccum* and *T. durum* in Man. and Sask.; occasionally on *Avena nuda*, *Bromus Pampellianus* and *Deschampsia caespitosa* in Sask.; on *Alopecurus pratensis*, *Beckmannia Syzigachne*, *Briza maxima*, *Dactylis glomerata*, *Festuca elatior*, *Phalaris canariensis* and *Sporobolus cryptandrus* in Man. In addition to the above, the following grasses grown in a grass garden at the Dominion Rust Research Laboratory, Winnipeg, were found infected naturally: *Agropyron Griffithii*, *Bromus sitchensis*, *Elymus curvatus*, *E. glaucus*, *E. virginicus*, *Festuca Myuros* and *Hordeum murinum*; but some of these grasses are not native to Man. *Puccinia graminis* is often destructive in Manitoba and eastern Saskatchewan. Many of the publications cited in the Bibliography refer to the important work which has been published on stem rust, particularly from the Rust Research Laboratory at Winnipeg (139-254), giving data on life-history, specialization, control, etc.; see also Buller (82, vol. III). The urediospores sometimes cause asthma (105); several cases were found by physicians in Man. in 1935.
- **graminis** var. **Phlei-pratensis** (Erikss. & Henn.) Stak. & Piem. II, III common on *Phleum pratense* in Man., but not general in Sask., being known only from eastern Sask. This variety evidently lives over winter in the uredial stage in Man.
- **granulisporea** Ell. & Galloway. I on *Allium textile*; Fenn, Alberta; coll. A. H. Brinkman. From the aecia alone it cannot be determined whether this collection belongs to this species or to *Uromyces bicolor*, but from the ranges given in Arthur's manual it seems probable that it belongs to *P. granulisporea*.

- Puccinia Grindeliae** Peck. III on *Aplopappus spinulosus*; Lloydminster, Saskatoon and Southey, Sask.; on *Grindelia perennis*; common in Sask., and at Pincher Creek, Alberta; on *Lygodesmia juncea*; Brandon, Treesbank and Virden, Man.
- **Haleniae** Arth. & Holw. III on *Gentiana Amarella* var. *acuta*; Minaki, western Ont.
- **Helianthi** Schw. O, I, II, III on *Helianthus annuus*; common and sometimes injurious in Man. and Sask.; collected also at Edmonton, Alberta; on *H. Maximiliani*, *H. petiolaris*, *H. subtuberosus* and *H. tuberosus* in Man.; on *H. aridus*, *H. fascicularis* and *H. subrhomboides* in Sask. Craigie (150-156) and Brown (145-147) have studied the heterothallism and diploidization of this rust.
- **Heucherae** (Schw.) Diet. III on *Heuchera Richardsonii*; Berens River and Treesbank, Man.; on *Mitella nuda*; common where this host grows in Man. and Sask.
- **Hieracii** (Schum.) Martius. II, III common on *Hieracium scabriusculum* and *Taraxacum officinale* in Man. and Sask.; on *Agoseris glauca*; Anaheim, St. Gregor and St. Walburg, Sask.; on *Crepis runcinata*; Cypress Hills, Sask.; on *Taraxacum dumetorum*; Redberry Lake, Sask.; on *Hieracium canadense*; Victoria Beach, Man. Pyenia have been collected on dandelion in Man., and the rust on this host extends at least to Mile 326 on the Hudson Bay Railway, Man., and to Edmonton, Alberta.
- **intermixta** Peck. O, I common on *Iva axillaris* in Sask.; III collected on the same host at Hamiota, Man. and Saskatoon, Sask. The rust evidently accompanies the host to approximately its eastern limit in Man.
- **Iridis** (DC.) Wallr. II on *Iris versicolor*; West Hawk Lake in eastern Man. This rust is rare in Man.; many Iris plants were examined before it was found.
- **Koeleriae** Arth. II, III on *Koeleria cristata* (*K. gracilis*); Saskatoon, Sask.
- **Liatridis** [Webber] Bethel. O, I on *Liatris aspera* (*L. scariosa*); Birds Hill, Man., Belvoir, Sask.; on *L. ligulistylis*; Wroxton, Sask.; on *L. punctata*; Beaver Creek, Dana, Sinteluta and Sutherland, Sask.; II, III on *Agrostis hyemalis*; Treesbank, Man., Canora, Melville and Rosthern, Sask.
- **Limosae** Magn. O, I on *Lysimachia* (*Naumburgia*) *thyrsiflora*; Norway House.
- **Linkii** Klotzsch. III on *Viburnum pauciflorum*; Berens River and Norway House, Man., Emma Lake, Katepwa, Kingsmere Lake and Lake Waskesiu, Sask. This rust is common in the north where the host grows.
- **Magnusiana** Körn. O, I on *Anemone canadensis*; The Pas, Man., and recorded in Arthur's Manual from Sask.; II, III on *Phragmites communis*; Dauphin, Man.; coll. W. P. Fraser in 1917. The teliospores are distinguished from those of *P. Phragmitis* by being narrow, not constricted, and thickened at the apex.
- **Malvacearum** Bertero. III on *Althaea rosea* and *Malva rotundifolia*; Univ., Man.; on *Malva* sp. cult.; Winnipeg. Although doubtful reports of this rust were received previous to 1929, it was not found definitely until 1932 when it appeared on hollyhock at the University and has persisted to cause some injury in succeeding years. Illustrated and described by Buller (82, vol. III).
- **marylandica** Lindr. O, I, II, III common on *Sanicula marilandica* across southern Man. and in Zone 3 in Sask.
- **Menthae** Pers. O, I, II, III common on *Mentha glabrior* in Man. and Sask.; on *Monarda menthaefolia* and *Monarda* spp. in Sask.; on *Monarda fistulosa* in Man.
- **mesomajalis** Berk. & Curt. III on *Clintonia borealis*; Kenora, western Ont.
- **millefolii** Fuckel. III on *Achillea millefolium*; Carberry, Man. and Raymore, Sask.; on *Artemisia frigida*; Brandon and Virden, Man.
- **minussensis** Thüm. O, I, II, III common on *Lactuca pulchella* across Man. and Sask., and in Peace River district, Alberta.
- **monoica** [Peck] Arth. O, I on *Arabis brachycarpa*, *A. ovata* and *A. retrofracta* (*A. ? Holboellii*); Saskatoon, Sask., and on *A. retrofracta* also at Carmel, Sask.; on *Arabis* spp.; Birds Hill and Vivian in eastern Man., Treesbank, Man., Katepwa and Pike Lake, Sask.; II, III on *Koeleria cristata* (*K. gracilis*); Saskatoon, Sask.; probably this rust on *Trisetum spicatum*; Le Pas, Man. The aecia are common in early spring on *Arabis*, and arise from systemic mycelium.
- **montanensis** Ell. II, III on *Agropyron dasystachyum*; Saskatoon, Sask., Edmonton and Peace River, Alberta; on *A. repens*, Saskatoon, Sask.; on *A. Richardsonii*; Dauphin, Man., Saskatoon, Sask., Peace River, Alberta; on *A. Smithii*; Brandon, Man.; on *A. tenerum*;

- Brandon, Man., Lloydminster and Saskatoon, Sask., Peace River, Alberta; on *Elymus canadensis*; Brandon and Dauphin, Man., Saskatoon, Sask.; on *E. curvatus*; Dauphin, Man.; on *E. jejunos*; Brandon, Man.; on *Hordeum jubatum*; Edmonton, Alberta. This rust is widespread on the prairies, and occurs far beyond the aecial host *Berberis Fendleri* of Colorado and New Mexico.
- Puccinia obscura** Schroet. II, III on *Luzula campestris* var. *multiflora*; McKague, Sask.; coll. A. J. Breitung. This extends the known range of this rust.
- **obtecta** Peck. II, III on *Scirpus validus*; Pike Lake and Vonda, Sask.
- **orbicula** Peck & G. W. Clint. III on *Prenanthes racemosa*; Cudworth and St. Gregor, Sask. The range of this rust doubtless includes Man.
- **ornata** Arth. & Holw. III on *Rumex occidentalis*; Glenboro, Man., Meota and Lake Waskesiu, northern Sask., and Craigmyle, Alberta (A. H. Brinkman).
- [— **Ornithogali-thyrsoides** Diet. This introduced rust developed II and III on peduncles and flowers of *Ornithogalum ?lacteum* grown in Winnipeg from bulbs from Capetown, South Africa. It was collected in 1932.]
- **Ortonii** Jackson. O, I, II, III on *Dodecatheon pauciflorum*; Humboldt, Sask. The O and I were identified by Cummins as belonging to this species rather than to *Uromyces acuminatus*. This record adds another host and extends the range of the rust.
- **Parkerae** Diet. & Holw. III on *Ribes lacustre* (var. *parvulum*); Banff, Alberta. This also adds a host and extends the range.
- **peridermiospora** (Ell. & Tracy) Arth. O, I on *Fraxinus pennsylvanica*; Univ., Man.; on *F. pennsylvanica* var. *lanceolata*; Estevan, Sask. Both collections were made in July 1926.
- **Phragmitis** (Schum.) Körn. O, I on *Rheum Rhaponticum*; Brandon and Inwood, Man.; on *Rumex mexicanus* and *R. occidentalis*; Dauphin, Man.; II, III on *Phragmites communis*; Dauphin. The rust is rarely reported on rhubarb, but occurred in early July, 1933, the Inwood specimen being so abundantly infected that it was sent in by a grower who asked how the disease could be prevented. Cultures were made by Fraser (20) with telial material sown on *Rumex occidentalis*.
- **Physalidis** Peck. III on *Physalis virginiana*; Treesbank; coll. E. Criddle; recorded in Arthur's Manual on *P. heterophylla* from Man.
- **Pimpinellae** (Strauss) Martius. O, I, II, III common on *Osmorrhiza longistylis* at Univ. and Winnipeg, Man.; III on the same host at Pike Lake, Sask.
- **Poa-eudeticae** (Westend.) Jørstad. II on *Poa pratensis* in Man., II and III in Sask.; on *P. palustris* (*P. triflora*); Saskatoon, Sask.; on *Poa* sp.; Humboldt, Sask. The uredia contain paraphyses; the telia are not commonly produced, but were found in Sask.
- **Polygoni-amphibii** Pers. var. *Convolvuli* (Alb. & Schw.) Arth. II, III on *Polygonum Convolvulus*; Treesbank and Univ., Man.
- **Polygoni-amphibii** var. *Persicariae* (Strauss) Arth. II, III common on *Polygonum amphibium* var. *Hartwrightii* and *P. Muhlenbergii* in Man. and Sask., and on the latter host at Vegreville, Alberta.
- **porphyrogenita** Curt. III on *Cornus canadensis*; Norway House to Victoria Beach, Man.; Kingsmere Lake and Lake Waskesiu, Sask. This rust is fairly common where the host grows abundantly.
- **Pulsatillae** Kalchbr. III on *Anemone patens* var. *Wolfgangiana*; Estevan and Saskatoon, Sask.
- **punctata** Link. I, II on *Galium trifidum*; Norway House; I on *Galium* sp., Treesbank, Man.
- **punctata** var. *trogodytes* (Lindr.) Arth. II, III on *Galium triflorum*; Univ., Man.
- **pygmaea** Erikss. II, III on *Oryzopsis asperifolia*; near Gimli and seen near Lac du Bonnet, Man. The known range is considerably extended by these collections.
- **Ribis** DC. III on *Ribes triste*; Berens River and Victoria Beach, Man., Kingsmere Lake and Lake Waskesiu, Sask.
- **rubefaciens** Johans. III common on *Galium boreale* across Man. and in Zone 3 in Sask.
- **rubigo-vera** (DC.) Wint. var. *Agropyri* (Erikss.) Arth. O, I in Sask. as follows: common on *Anemone cylindrica*; on *A. globosa*; Saskatoon; on *Clematis ligusticifolia*; Leader and Saskatoon (also at Medicine Hat, Alberta); on *Ranunculus (Halerpestes) Cymbalaria*, *Thalictrum dioicum* and *T. venulosum*; common, and on the last host also at Vegreville, Alberta. In Man. this rust (or possibly in some cases the var. *agropyrina*) has been collected on *Actaea*

- alba*, *A. rubra*, *Anemone cylindrica*, *A. virginiana*, *Thalictrum dasycarpum* and *T. venulosum*. II, III on *Agropyron dasystachyum*; Saskatoon, Sask. and Peace River, Alberta; on *A. Richardsonii*; Univ., to western Man. and Edmonton, Alberta; on *A. Smithii*; Arcola and Saskatoon, Sask. and Macleod, Alberta; on *A. tenerum*; Brandon, Morden and Winnipeg, Man., Quill Lake, Sask., Lake Louise, Alberta; on *Bromus ciliatus*; Edmonton and Spirit Lake, Alberta; on *B. Porteri*; Saskatoon, Sask.; on *B. Pumpellianus*; Elfros, McKague, Melfort, Prince Albert and Wadena, Sask., Edmonton, Peace River and Spirit River, Alberta; on *Elymus diversiglumis*; Naisberry, Sask.; on *E. Macounii*; Morris and Winnipeg, Man., Saskatoon, Sask.; on *Hordeum jubatum*; Brandon, Morris and Reston, Man.; on *Poa arida*; Brandon, Man.; on *Puccinellia tenuiflora*; Broadview, Canora, Carlyle, Saskatoon and Wadena, Sask.; on *P. ?mukaensis*; Churchill, Man. Cultures with this rust were made by Fraser (21).
- Puccinia rubigo-vera* var. *agropyrina*** (Erikss.) Arth. O, I on *Thalictrum dasycarpum*; Indian Head, Sask.; on *T. venulosum*; Swift Current, Sask.; II, III on *Bromus ciliatus*; Brandon, Man. and Naisberry, Sask.; on *B. latiglumis*; Brandon and Morris, Man.; on *B. purgans*; Neepawa, Man. Cultures were made by Fraser (20, 21, 24). The teliospores are commonly pleuricellular. In Arthur's Manual a few of the collections listed under the previous entry are included with this variety.
- ***rubigo-vera* var. *apocrypta*** (Ell. & Tracy) Arth. O, I on *Oposmodium occidentale*; Hartney and Treesbank, Man.; on *Phacelia Franklinii*; Selkirk, Man. If the telial stage of this variety has been collected, it is included under var. *Agropyri*.
- ***rubigo-vera* var. *impatiens*** (Arth.) Mains (as in Arthur's Manual). O, I on *Impatiens biflora*; Berens River, Dauphin and Waggles Springs, Man.; II, III on *Hordeum jubatum*; Dauphin and Ste. Rose du Lac, Man.; cultured to this host and also to *Elymus canadensis* by Fraser (20, 21).
- ***rubigo-vera* var. *Secalis*** (Erikss.) Carleton (*P. dispersa* Erikss. & Henn. in part). Common on *Secale cereale* in Man. and Sask.
- ***rubigo-vera* var. *Tritici*** (Erikss. & Henn.) Carleton (*P. triticina* Erikss.). Common and sometimes injurious on *Triticum aestivum* in Man. and Sask.; occasional on *T. durum* and *T. Spelta*.
- ***scaber*** (Ell. & Ev.) Barth. II, III common on *Stipa viridula* in Man. and Sask. Amphispores are abundant, but absent in *P. Stipae*.
- ***sessilis*** Schneid. O, I on *Iris versicolor*; Victoria Beach, Man.; on *Maianthemum canadense*; Univ. and Winnipeg, Man.; on *Smilacina stellata*; Brandon, Treesbank and Univ., Man., Indian Head and Sutherland, Sask.; II, III on *Phalaris arundinacea*; Brandon and Swan River, Man., Indian Head and Sutherland, Sask.
- ***Sherardiana*** Körn. III on *Malvastrum coccineum* in western Man., common in Sask., and at Morrin, Alberta.
- ***Sorghi*** Schw. II, III common but scarcely injurious on *Zea Mays* across southern Man., and at Imperial and Indian Head, Sask.
- ***Sporoboli*** Arth. O, I on *Lilium philadelphicum* var. *andinum* (*L. umbellatum*); Kennedy and Oakshella, Sask.; coll. B. J. Sallans; perhaps this rust on the same host at Brandon, Man. These apparently are the first Canadian records.
- ***Stipae*** Arth. O, I on *Chrysopsis hirsutissima*; Beaver Creek, Indian Head and Saskatoon, Sask.; on *Lygodesmia juncea*; Shiloh, Man., Beaver Creek, Pike Lake and Saskatoon, Sask.; on *Solidago rigida* and *S. spp.* in Sask.; II, III on *Stipa comata*; Boissevain, Rapid City and Treesbank, Man., Watrous, Sask.; on *S. spartea*; Elkhorn, Man., Antler, Sask.; on *S. comata* var. *intermedia* (*S. Tweedyi*); Peace River, Alberta. The aecia are covered by the host tissue and open by a pore, and can thus be distinguished from those of *P. extensicola*.
- ***?uliginosa*** Juel. I on *Parnassia palustris*; Cape Merry at Churchill on Hudson's Bay; coll. P. H. Gregory, Aug. 23, 1934. Only one small group of hypophyllous aecia was present, with spores $16-18 \times 18-20 \mu$, spore wall about $1\frac{1}{2} \mu$ thick. This rust is recorded by Arthur in North America only from Kodiak Island, Alaska.
- ***vagens*** (DC.) Arth., var. ***Epilobii-tetragoni*** DC. O, I, II, III on *Epilobium adenocaulon*; Moose Jaw, and on *Epilobium* sp., Indian Head and Weyburn, Sask. This rust is not known elsewhere in Canada.
- ***vexans*** Farl. III on *Bouteloua curtipendula*; Treesbank, Man.; coll. E. Criddle; II, III on *B. gracilis*; Brandon, Man.

- Puccinia Violae** (Schumach.) DC. O, I, II, III on *Viola adunca*; Treesbank, Man.; on *V. canadensis* in Man. and Sask.; on *V. nephrophylla*; Swift Current and Watson, Sask.; on *V. pubescens*; Morden and Univ., Man.; O, I on *V. odorata*; Treesbank, Man.; on *V. pedatifida*; Treesbank, Man.; Jansen, Sask.; on *V. tricolor*; Univ., Man.; II, III on *V. renifolia*; Saskatoon, Sask.; on *Viola* spp. in Man. and Sask. See note under *P. Ellisiana* regarding aecia on *Viola*.
- **Xanthii** Schw. III on *Ambrosia psilostachya* (*A. coronopifolia*); Pipestone, Man.; on *A. trifida*; along the Red River in Man.; on *Xanthium commune*; not uncommon along roadsides and rivers in Man.; on *Xanthium* sp.; Delta and Treesbank, Man.
- **Ziziae** Ell. & Ev. III on *Zizia cordata*; St. Gregor, Sask. This rust is known otherwise only in eastern Washington. See note under *P. Angelicae*.
- Tranzschelia suffusa** (Holw.) Arth. III common on *Anemone patens* var. *Wolfgangiana* in western Man. and in Sask.
- **Thalictri** (Chev.) Diet. III on *Thalictrum dasycarpum* and *T. sp.*; Univ. and Winnipeg, Man.; on *T. venulosum*; Saskatoon, Sask.; coll. D. F. Adams.
- Uromyces acuminatus** Arth., var. **magnatus** (Arth.) J. J. Davis. O, I on *Maianthemum canadense*; Macdowall, Sask.; on *Smilacina stellata*; North Battleford, Sask.; probably on these hosts also in Man., but they have not yet been differentiated from the aecia of *Puccinia sessilis*; II, III on *Spartina gracilis*; North Battleford, Sask.; on *S. pectinata*; Brandon, Man.
- **acuminatus** var. **Polemonii** (Peck) J. J. Davis. O, I on *Gilia* (*Collomia*) *linearis*; Katepwa, Sask.; on *Phlox* sp. cult.; Indian Head, Sask.; II, III on *Spartina gracilis*; Katepwa, Sask., at the site of the earlier I on *Gilia*; on *S. pectinata*; Meesomin, Sask.
- **acuminatus** var. **Steironematis** (Arth.) J. J. Davis. O, I on *Dodecatheon pauciflorum*; Humboldt, Muenster and Shellbrook, Sask. Aecia of this rust occur also on *Steironema ciliatum*; such aecia are more or less indistinguishable from those of *Puccinia Distichlidis*, q.v.
- **Alopecuri** Seymour. O, I on *Ranunculus Macounii* and *R. sceleratus*; Brandon, Man.; II, III on *Alopecurus geniculatus* var. *aristulatus*; Brandon, Man., Prince Albert, Saskatoon, Tisdale, Wolseley, and Yorkton, Sask. The aecia were proved to belong to this rust by cultures by Fraser (20, 22). They are morphologically like those of *Puccinia rubigo-vera*.
- **caryophyllinus** (Schrank) Wint. II, III on *Dianthus Caryophyllus*; Brandon and Winnipeg, Man., Saskatoon, Sask. This rust is often injurious to carnations.
- **coloradensis** Ell. & Ev. var. **campester** Arth. O, I, III on *Vicia americana*; Univ. and Winnipeg, Man.; on *V. americana* var. *angustifolia* (*V. sparsifolia*); Sask. (recorded in Arthur's Manual); on *V. Cracca*; Clear Lake, Man. The aecia are systemic.
- **Dactylidis** Oth. III on *Poa crocata*; Beaverlodge, Alberta; on *P. pratensis*; Spirit River, Alberta.
- **Fabae** (Pers.) de Bary. O, I on *Lathyrus ochroleucus*; Cypress Hills, Sask. and Univ., Man.; on *L. venosus*; Humboldt, Sask.; on *Vicia americana*; Univ., Man. and Saskatoon, Sask.; II, III on *Lathyrus ochroleucus*; Katepwa and Saskatoon, Sask.; on *L. venosus* in Man., Sask., and Edmonton and Peace River, Alberta; on *Pisum sativum*; Univ., Man., Saskatoon, Sask.; on *Vicia americana* in Man., Indian Head and Pike Lake, Sask., Edmonton and Peace River, Alberta; on *V. oregana*; Edmonton, Alberta.
- **Gentianae** Arth. II on *Gentiana strictiflora*; Dana, Sask.; det. J. C. Arthur.
- **Glycyrrhizae** (Rabenh.) Magn. O, I, III common on *Glycyrrhiza lepidota* in Man. and Sask. The aecia are uredinoid. I. L. Connors finds urediospores present in localized telia, but secondary uredia are apparently not formed.
- **Hedysari-obscuri** (DC.) Carest. & Piccone. O, I, II, III on *Hedysarum americanum*; Dana, Prince Albert and St. Walburg, Sask. and Spirit River, Alberta; on *H. boreale*; Binscarth and Rapid City, Man., Humboldt, Meesomin, Naicam, Reynaud and St. Gregor, Sask.; on *H. cinerascens*; Indian Head, Sask. The uredinia are acidoid and scattered.
- **houstoniatus** [Schw.] Sheldon. O, I on *Houstonia longifolia*; Macdowall and Prince Albert, Sask.
- **Hyperici** (Spreng.) Curt. I, II, III on *Hypericum perforatum*; Berens River, Man. This extends the range northward to 52°.
- **intricatus** Cooke. O, I on *Eriogonum flavum*; Saskatoon, Sask.; coll. J. H. L. Truscott; III on the same host at Estevan, Sask.; coll. I. L. Connors and B. J. Sallans. These are apparently the first reports for Canada.

- Uromyces Junci** (Desm.) Tul. O, I on *Cirsium Flodmanii*; Brandon, Man. and Saskatoon, Sask.; on *C. megacephalum*; Rosthern, Sask.; on *C. undulatum*; Kennedy, Saskatoon and Swift Current, Sask.; on *Helianthus petiolaris*; Brandon, Man. and Saskatoon, Sask.; on *H. subrhomboides*; Saskatoon, Sask.; II, III on *Juncus ater*; Rosthern (Seager Wheeler) and Saskatoon, Sask.; on *J. balticus*; Brandon, Oak Lake and Victoria Beach, Man., Saskatoon, Sask.; on *J. Dudleyi*; Treesbank, Man.; on *J. filiformis*; Fleming and Saskatoon, Sask.
- **nerviphilus** (Grognot) Hotson. I, III on *Trifolium repens*; Univ., Man.; apparently this species on *T. hybridum* at Watson, Sask. *U. nerviphilus* is easily confused with *U. Trifolii*, of which it may be only a condition with suppressed uredia.
- **periginus** Halst. O, I on *Rudbeckia laciniata*; Brandon, Carman and Dropmore, Man. This rust must remain somewhat doubtful until telia are found.
- **plumbarius** Peck. O, I, II, III on *Gaura coccinea*; Wawanesa, Man., Cochin, Estevan, Outlook and Saskatoon, Sask.
- **Polygoni** (Pers.) Fuckel. II on *Polygonum aviculare*; Winnipeg, Man.; on *P. buxiforme*; Saskatoon, Sask.; O, I, II on *P. erectum*; Carman to The Pas and Winnipeg, Man.; III on *P. ramosissimum*; Katrine, Man.; on *P. rubescens*; Regina, Sask.
- **proeminens** (DC.) Pass. O, I, II, III on *Euphorbia (Chamaesyce) glyptosperma*; Saskatoon, and II, III at Antler, Sask.; on *E. serpyllifolia*; Flin Flon, Morden and Univ., Man.
- **Psoraleae** Peck var. **argophyllae** (Seym.) Arth. O, I, III on *Psoralea argophylla*; Assiniboia and Saskatoon, Sask. This and the next variety have their known ranges extended by these records.
- **Psoraleae** var. **typica** Arth. O, I on *Psoralea lanceolata*, Tompkins, Sask., and III on the same host at Saskatoon.
- **punctatus** Schroet. II on *Oxytropis ?gracilis*; Birtle, Man.
- **Rudbeckiae** Arth. & Holw. III on *Rudbeckia laciniata*; Carman and Dauphin, Man.
- **Scirpi** (Cast.) Burr. O, I on *Cicuta occidentalis*; Saskatoon, Sask.; on *Stum cicutifolium*; Rapid City, Man., Saskatoon, Sask. II, III on *Scirpus paludosus*; Saskatoon and Vonda, Sask. Cummins (Mycologia, 27: 610) has recently separated *U. americanus* Speg. from *U. Scirpi*, but the Sask. collections belong in *U. Scirpi*.
- **Silphii** [Burr.] Arth. III on *Juncus longistylis*; Saskatoon, Sask. and recorded on this host from Man. in Arthur's Manual; on *J. tenuis*; Pike Lake, Sask.
- **striatus** Schroet. var. **Medicaginis** (Pass.) Arth. II on *Medicago sativa*; Univ.; Man. A little rust of alfalfa was first found in late Sept. and in Oct., 1931; but it has not been found in succeeding years.
- **Trifolii** (Hedw. f.) Léw. var. **fallens** (Desm.) Arth. II, III on *Trifolium medium* and *T. pratense*; Univ. to Winnipeg Beach, Man. Rust on red clover was first found in Man. in 1922. It has persisted and causes some injury around Winnipeg. Aecia have not been seen. It is not recorded in western Man., although it may have been overlooked; it is not yet known in Sask.
- **Trifolii** var. **hybridi** (W. H. Davis) Arth. I, II, III on *Trifolium hybridum* across Man. north to The Pas, in Sask. and at Edmonton, Alberta. Rust of alsike clover is widespread; it was collected at Kenville in western Man. in July 1921. Some injury may be caused by this rust. Aecia are common in Man., and have been found as late as Aug. 24; they were also collected at Melfort, Sask.
- **Trifolii** var. **Trifolii-repentis** (Liro) Arth. I, II, III on *Trifolium repens*; Univ. and Winnipeg, Man. The rust of white clover is fairly common around Winnipeg. It was first collected in 1920. Aecia are common. Records of the distribution of this rust in Man. are not available; it is reported from Alberta, but has not yet been found in Sask.
- **Zygadeni** Peck. I on *Zygadenus gramineus*; Craigmyle, Alberta; coll. A. H. Brinkman.
- Uropyxis Amorphae** (Curt.) Schroet. II, III on *Amorpha canescens*; Morden and Stony Mountain, Man.; on *A. fruticosa*; Portage la Prairie and Univ., Man.; on *A. nana*; Stony Mountain, Man. Thus rust was rather injurious to *Amorpha fruticosa* grown as a hedge at Portage la Prairie.
- **?Petalostemonis** (Farl.) de Toni. III on *Petalostemum oligophyllum*; Cypress Hills, Sask. The rust may be *U. affinis* Arth., according to G. B. Cummins. In either case, it is a new record for Canada.

AURICULARIALES

- Auricularia auricula*-Judae (L.) Schroet. On deciduous wood; Berens River, Victoria Beach eastward.
- Platyglœa fimicola* Schroet. On horse dung in culture; Univ. Identification verified by Gladys E. Baker. She found the spores to be slightly under the quoted size, that the hypobasidia were still morphologically distinct even when the epibasidia were mature, and that the mycelium has clamp connexions.
- Saccoblastia pinicola* Bourd. & Galz. On fallen *Populus*; Victoria Beach; det. Mildred Nobles and Irene Mounce, verified by Drs. Linder and Rogers; studied also by Gladys E. Baker (Ann. Missouri Bot. Gard. 23: 89), who has transferred it to *Helicogloea*. This is the first American record of this species.

TREMELLALES

- Eichleriella spinulosa* (Berk. & Curt.) Burt. Five collections on bark of *Populus*; Cross Lake, Swan River and Univ.
- Exidia talba* (Lloyd) Burt. On deciduous wood; Winnipeg.
- *glandulosa* (Bull.) Fr., "Witches' butter." Common on branches of *Populus*, *Salix*, etc. in Man.
- Naematelia nucleata* (Schw.) Fr. On dead branches of *Betula alba* var. *papyrifera*, *Populus*, *Tilia americana* and *Viburnum*; Univ., Victoria Beach.
- Sebacina calcea* (Pers.) Bres. On fallen branches of *Picea*, *Ribes*, etc.; Univ. to Victoria Beach and eastward in Man.; on *Populus balsamifera*, Lake Waskesiu, Sask.; det. I. Mounce and E. M. Wakefield.
- *incrustans* (Pers.) Tul. Not uncommon, encrusting grass, twigs, etc.; Univ. It is evident that the fungus called *Ptychogaster subiculoides* Lloyd (Mycological Notes, 67: 1143) was young or abnormal *S. incrustans*.
- Tremella lutescens* Pers. On *Alnus incana*, *Betula*, etc.; Berens River, Kenora, Norway House, Univ.
- *mesenterica* (Retz.) Fr. On decaying wood, Norway House; det. C. G. Lloyd.
- *reticulata* (Berk.) Farlow. On the ground in woods; Univ.; det. C. G. Lloyd as *T. clavarioides* Lloyd; Winnipeg; det. W. C. Coker.
- *saccharina* Fr. var. *foliacea* (Brefeld) Bres. (*Ulocolla foliacea* Brefeld). On bark of dead *Abies balsamea* and *Pinus Banksiana*; Berens River to Clear Lake and Kenora.
- ?*viscosa* Berk. On fallen *Populus*; Univ.
- Tremellodon gelatinosum* (Scop.) Pers. Occasional on decaying stumps, etc. of conifers; Victoria Beach eastward.
- Tulasnella Eichleriana* Bres. On fallen deciduous wood; Univ.; det. M. K. Nobles; on decayed wood of *Betula alba* var. *papyrifera*; Victoria Beach; det. L. O. Overholts. D. P. Rogers (Ann. Mycol. 31: 185) includes *T. Eichleriana* as a synonym of *T. violæ* (Quél.) Bourd. & Galz.

DACRYOMYCETALES

- Calocera cornea* (Batsch) Fr. Common on dead *Betula*, *Populus*, etc.; Clear Lake, Univ. northward. Spore discharge in specimens from Winnipeg described and illustrated by Buller (82, vol. II).
- *viscosa* (Pers.) Fr. Recorded from Kenora.
- Dacryomyces aurantius* (Schw.) Farl. Common on coniferous wood, and on railway ties everywhere in Man.; probably this species at Lake Waskesiu, Sask.
- *deliquescens* (Bull.) Duby. On old coniferous wood; Norway House to Univ. See Buller (94 and 82, vol. II).
- *Ellisii* Coker. On bark; Kenora.
- *palmaris* (Schw.) Burt. On a conifer; Clear Lake.
- Guepinia elegans* Berk. & Curt. On fallen *Acer Negundo*; Univ. Fruit-body pezizoid then spathulate, tan-colored; spores 13–18 × 6–7 μ , yellowish-hyaline, finally 4-celled.
- *helvelloides* (DC.) Fr. (*Gyrocephalus rufus* (Jacq.) Bref.). In deep mossy woods; Clear Lake, Pinawa. The three collections examined have been alike in producing an erect spathulate or raquet-shaped fructification 3–6 cm. tall, including stalk, and 2–4 cm. wide;

pileus and stem soft, translucent whitish, becoming very pale yellow-tan; basidia with long sterigmata; mature spores $9-11 \times 4-6 \mu$. G. W. Martin considers it a form of *G. helvelloides*, and points out that Lloyd (Myc. Notes, Fig. 2178) illustrates a similar form. Martin (Amer. Journ. Bot. 23: 628) decides that the correct name is *Phlogiotis helvelloides* (Fr.) Martin.

AGARICALES

*Thelephoraceae**, including *Exobasidiales* and *Hypochnaceae*

- Aleurodiscus acerinus* (Pers.) v. Höhn & Litsch. On bark of *Quercus macrocarpa*; Univ.; coll. I. Mounce, det. M. K. Nobles.
- *amorphus* (Pers.) Rabenh. On bark of a conifer; Berens River and Kenora; det. E. M. Wakefield and M. K. Nobles.
- *cerussatus* (Bres.) v. Höhn. & Litsch. Common on dead *Populus*, *Salix*, *Ulmus americana* and other deciduous wood; Univ. Burt records it only from Europe, Manitoba and Oregon; he wrote (May 4, 1921) that Manitoba specimens sent him were the first American specimens he had seen. Fourteen collections are now in the herbarium at Winnipeg.
- *griseocanus* (Pers.) v. Höhn & Litsch. On bark of old *Quercus macrocarpa*, *Salix amygdaloides* and *Vitis vulpina*; Univ.
- Coniophora ?arida* (Fr.) Karst. A somewhat doubtful specimen on fallen log of *Picea* sp.; 13 miles east of Beausejour.
- *byssoides* (Pers.) Fr. On dead, occasionally on charred, wood of *Picea* sp., *Pinus Banksiana*, *Populus* spp., etc.; ten collections all in or near coniferous areas around Lake Winnipeg and in eastern Man.
- *cerebella* Pers. (*C. puteana* (Schum.) Karst.). On fallen *Picea* sp., *Populus* sp., and *Thuja occidentalis*; Univ. eastward. This species was very abundant on poplar poles supporting a root cellar, and appeared to contribute to their early collapse.
- *Kalmiae* (Peck) Burt. On old wood of *Pinus Banksiana*; 13 miles east of Beausejour. This is a rare species.
- *olivacea* (Fr.) Karst. Common on decaying *Abies balsamea*, *Picea* sp.; occasional on *Populus* in coniferous areas; Berens River, Clear Lake and eastern Man.
- *polyporoidea* (Berk. & Curt.) Burt. On coniferous wood; Kenora, Victoria Beach.
- *suffocata* (Peck) Massee (*Hypochnus flavobrunneus* Dearness & Bisby, 71: 90, proves to be a synonym). Common on old wood or boards of *Picea* sp., *Pinus* sp.; less common on *Acer Negundo*, *Populus* sp.; Clear Lake, Univ. to Victoria Beach and eastward.
- Corticium albostramineum* (Bres.) (Overh.). On old root of *Picea*; Whitemouth.
- *arachnoideum* Berk. On old coniferous wood and *Populus*, etc.; Norway House, Univ., Victoria Beach.
- *argentatum* Burt. On branch of *Fraxinus pennsylvanica*; Univ. Previously known from Nebraska.
- *Berkeleyi* Cooke. On old wood of *Picea*; 13 miles east of Beausejour.
- *bicolor* Peck. Three collections on very decayed *Abies balsamea*, etc.; Kenora, Victoria Beach.
- *bombycinum* (Sommerf.) Bres. On old coniferous wood; Clear Lake.
- *botryoideum* Overholts. On old bark of *Pinus Banksiana*; Victoria Beach; on bark probably of *Populus*; Univ. Described from Pennsylvania (Mycologia, 26: 510). Rogers (Univ. Iowa Studies Nat. Hist. 17: 15) places *C. botryoideum* with *Botryobasidium coronatum* (Schroet.) Donk.
- *centrifugum* (Lév.) Bres. On bark of *Quercus macrocarpa* and wood of *Viburnum*, etc.; Stony Mountain, Univ.
- *confluens* Fr. On dead limb of ?*Tilia americana*; Univ.
- *crustaceum* (Karst.) v. Höhn & Litsch. Common on bark and wood of *Crataegus*, *Fraxinus pennsylvanica*, *Populus*, *Prunus*, *Quercus macrocarpa*, *Viburnum*, *Salix*; Univ. and vicinity. On uneven substrata the fungus may resemble resupinate *Hydnaceae*.
- *effuscatum* Cooke & Ell. On deciduous and ?coniferous wood; Beausejour and Kenora.

* Recent collections have been studied carefully by Drs. Mildred Nobles and Irene Mounce, who have forwarded parts in many cases to Dr. L. O. Overholts or Miss E. M. Wakefield. These collections are listed without the notes on characters of the fungi, so that these four specialists may publish their own observations.

- Corticium fenestratum** Overholts (*Coniophora vaga* Burt). On old *Acer Negundo*, *Populus balsamifera*, *Ulmus americana*; Univ.; on ?*Picea*; Berens River; on deciduous wood; Vivian.
- **filicinum** Bourd. On old ?*Vitis vulpina*; Winnipeg.
- **flavescens** (Bonord.) Massee. On decayed *Populus*; Clear Lake.
- **galactinum** (Fr.) Burt. Common on old *Abies balsamea* and other coniferous bark or wood; Victoria Beach, eastern Man.; one collection on old deciduous wood; Univ.
- **incrustans** v. Höhn & Litsch. On deciduous wood; Univ.
- **investiens** (Schw.) Bres. On deciduous wood; Kenora.
- **lactescens** Berk. On *Populus*, etc.; Beausejour, St. Norbert, Univ.
- **laeve** Pers. On branches of *Pyrus Malus*; Univ.; on deciduous branch; Kenora.
- **lividocaeruleum** Karst. On dead conifers; Birds Hill and Norway House.
- **luridum** Bres. On *Populus*, etc.; Univ. and Winnipeg.
- **pelliculare** Karst. On old *Abies balsamea*, *Betula alba* var. *papyrifera*, *Juniperus*, *Picea* sp., *Pinus Banksiana* and *Ulmus americana*; Berens River to Winnipeg eastward.
- **polygonium** Pers. Eight collections, all on bark of *Populus*; Univ. eastward.
- **porosum** Berk. & Curt. On old *Populus*; Univ.
- **radiusum** Fr. On bark of conifer; Victoria Beach.
- **roseum** Pers. On old *Salix*, *Ulmus americana*, etc.; Stony Mountain to Univ.
- **rubellum** Burt. On old *Populus* and *Quercus macrocarpa*; Univ.
- **scutellare** Berk. & Curt. On twig of *Populus*; Univ.
- **septentrionale** Burt. On old ?*Amelanchier alnifolia*, *Quercus macrocarpa*, *Tilia americana*, etc.; Univ.; also at Kenora. Type collected at Univ., Oct. 19, 1922.
- **sociatum** Burt. On bare coniferous wood; Norway House (not on bark of *Thuja plicata*, as one might infer from Burt, Ann. Missouri Bot. Gard. 13: 192).
- **Solani** (Prill. & Delacr.) Bourd & Galz. Not uncommon on lower stems of *Solanum tuberosum*; Man. and Sask.; on stems of *Lycopersicum esculentum*; Winnipeg. This, the "perfect" stage of *Rhizoctonia Solani*, is often included under *C. vagum*.
- **subcoronatum** v. Höhn. & Litsch. On decayed wood of *Abies balsamea* or *Picea* or both; Berens River, Norway House, Victoria Beach.
- **vagum** Berk. & Curt. On bark and wood of *Abies balsamea*, *Pinus Banksiana*, *Thuja occidentalis* and *Picea*; Berens River, Norway House, Victoria Beach, eastern Man.
- **vellereum** Ell. & Cragin. On old *Populus* and *Salix*; Univ. and Winnipeg, Man.; Saskatoon, Sask.; coll. I. Mounce.
- Craterellus Cantharellus** (Schw.) Fr. Under conifers; Ingolf, Victoria Beach.
- **clavatus** (Pers.) Fr. In coniferous woods; Berens River, Clear Lake, Victoria Beach. 10-13 × 4-5 μ .
- **lutescens** (Pers.) Fr. Amongst moss in or near bogs; Lac du Bonnet, Norway House. Pileus infundibuliform, watery chestnut brown; hymenium and stem orange yellow; spores apiculate, 8-12 × 6-7 μ .
- Cyphella capula** (Holmsk.) Fr. On old fronds of *Pteritis nodulosa*; Univ.
- **fasciculata** (Schw.) Berk. & Curt. On old *Alnus incana*, *Corylus*, *Populus*, etc.; Univ. to Victoria Beach and eastward. 7-9 × 2-3 μ .
- **galeata** (Schum.) Fr. On mosses; Vivian. Plants gray, 4-12 mm. wide; hymenium somewhat wrinkled; spores 7-10 × 4-5 μ , pip-shaped.
- **minutissima** Burt. Common on bark and wood of dead *Populus*; Clear Lake, Univ. and Victoria Beach, Man.; St. Gregor, Sask. 5-6 × 3-4 μ .
- **muscigena** Pers. ex. Fr. On mosses; Vivian. Plants white; hymenium drying buff; spores apparently c. 5 × 3 μ .
- **Tiliae** (Peck) Cooke. Very common on dead branches of *Tilia americana* along the Red River.
- ?**trachychaeta** Ell. & Ev. On fallen leaves of *Quercus macrocarpa*; Univ.; Nov. 1. Plants $\frac{1}{4}$ -1 $\frac{1}{2}$ mm. wide, saucer-shaped, attached by narrow base; mycelial threads or hairs rough, sometimes almost spiny; spores 6-7 × 2 $\frac{1}{2}$ -3 μ . This seems to fit the imperfectly described *C. trachychaeta*.
- Cytidia salicina** (Fr.) Burt. Common on dead branches of *Salix*; Univ. eastward. Conspicuous by its red color.

- Exobasidium Ledi** Karst. On *Ledum groenlandicum*; Lake Waskesiu, Sask. No North American records of an *Exobasidium* on *Ledum* were found. It may be a form of *E. Vaccinii*.
- **Vaccinii** (Fuckel) Woron. On *Arctostaphylos uva-ursi*; across Man. and at Sutherland, Sask.; on *Azalea* sp.; Winnipeg; on *Vaccinium* spp.; around Lake Winnipeg.
- Hymenochaete agglutinans** Ell. Between branches of *Amelanchier alnifolia*, etc.; Univ., Victoria Beach. The fungus "agglutinates" the branches together.
- **badioferruginea** (Mont.) Lév. On dead branches of *Alnus incana*, etc.; Berens River and Indian Bay.
- **cinnamomea** (Pers.) Bres. Common on old *Populus*, *Symphoricarpos occidentalis*, etc.; Berens River, Clear Lake and along the Red River.
- **corrugata** (Fr.) Lév. On branches of *Corylus*, etc.; Univ.
- **Curtisii** (Berk.) Morgan. On dead branches of *Quercus macrocarpa*; common along the Red River.
- **episphaeria** (Schw.) Masee. On twigs; Univ.
- **rubiginosa** (Dicks.) Lév. On bark of frondose tree or shrub; Winnipeg; det. E. A. Burt.
- **tabacina** (Sow.) Lév. On dead branches; Kenora, Victoria Beach.
- **tenuis** Peck. On decaying *Abies balsamea* and *Picea*; Clear Lake, Victoria Beach.
- Hypochnus canadensis** Burt. On old deciduous wood; Univ.; on charred *Pinus Banksiana*; Lac du Bonnet; on old dung along the Hudson's Bay Railway.
- **cervinus** Burt. On old bark; Norway House; det. E. A. Burt. Type from Washington.
- **cinerascens** Karst. On *Populus*; Lac du Bonnet.
- **coriarius** (Peck) Burt. On decayed *Betula alba* var. *papyrifera*, *Picea*, *Populus*, and *Salix*; Clear Lake, Univ., Victoria Beach.
- **echinosporus** (Ell.) Burt. On *Pinus Banksiana*, *Populus*, and other old deciduous wood; Univ., Winnipeg, eastern Man.
- **epiphyllus** (Schw.) Burt (*H. granulatus* (Peck.) Burt). On deciduous wood; Univ.; on decaying bark; Kenora.
- **ferrugineus** (Pers.) Fr. On old *Populus*, etc.; Univ. Victoria Beach.
- [— **flavobrunneus** Dearness & Bisby. See *Coniophora suffocata*.]
- **fumosus** Fr. On fallen *Abies balsamea*, *Picea canadensis*, *Pinus Banksiana*, *Populus*, etc.; Clear Lake, Norway House, Univ. eastward.
- **fuscus** (Pers.) Fr. On much decayed wood; 13 miles east of Beausejour.
- **isabellinus** Fr. On old *Populus*; Beausejour, Clear Lake.
- **pallidofulvus** (Peck) Burt (*H. subferrugineus* Burt). On decayed *Betula alba* var. *papyrifera*, *Populus*, and leaf mold; Clear Lake, Univ., Victoria Beach.
- **pannosus** (Berk. & Curt.) Burt. On decayed *Picea*, *Populus*, etc.; Univ. to Victoria Beach eastward.
- **pilosus** Burt. On decayed ?*Populus*; Univ. Type from Wisconsin; apparently rare.
- **rubiginosus** Bres. On old *Picea canadensis*; Clear Lake; on decayed ?*Populus*; Univ. A rare species.
- **spongiosus** (Schw.) Burt. On moss; Beausejour; on bark of frondose tree or shrub; Univ.
- **spongiosus** var. **spiniferus** (Burt) Bourd. & Galz. On decayed ?*Picea*; Victoria Beach.
- **umbrinus** (Fr.) Quél. On old *Acer Negundo*, ?*Abies*, *Fraxinus pennsylvanica*, charred *Pinus Banksiana*, *Populus*; Clear Lake, Univ. to Victoria Beach eastward.
- Peniophora Allescheri** Bres. On old bark of *Populus*; Univ.
- **alutaria** Burt. On old *Abies balsamea*, *Picea* and ?*Larix laricina*; Berens River, Victoria Beach eastward.
- **aurantiaca** Bres. On fallen or standing dead branches of *Alnus incana*; one collection evidently on *Betula*; Berens River, Kenora, Norway House.
- **candida** (Pers.) Lyman, associated with the conidial stage *Aegerita candida* Pers. On old wood; Univ.; det. E. M. Wakefield.
- **carnosa** Burt. On old bark of conifer (?*Picea*); Vivian.
- **cinerea** (Pers.) Cooke. Very common on dead branches of *Arctium*, *Betula alba* var. *papyrifera*, *Amelanchier alnifolia*, *Fraxinus pennsylvanica*, *Quercus macrocarpa*, *Salix*, *Symphoricarpos occidentalis*, *Ulmus americana*, etc.; Berens River to Univ. eastward; on bark of *Pinus Banksiana* near Marchand.
- **coccineofulva** (Schw.) Burt. On old deciduous wood; Univ.

- Peniophora crassa** Burt. On old *Populus*; Univ.
- **cremea** Bres. On old *Elaeagnus argentea*, *Pinus Banksiana* and on deciduous wood; Souris, Swan River, Univ., Vivian, Victoria Beach.
- **gigantea** (Fr.) Massee. On old deciduous wood; Univ.
- **glebulosa** Bres. On *Picea* and *Pinus Banksiana*; one collection on *Salix*; Beausejour, Berens River, Norway House.
- **guttulifera** (Karst.) Sacc. Five collections on old *Acer Negundo*, *Populus* and *Salix*; Univ.
- **incarnata** (Pers.) Karst. On old *Fraxinus pennsylvanica*, etc.; St. Norbert, Univ.
- **livida** Fr. ex Burt. On fallen *Picea*; east of Beausejour.
- **longispora** (Pat.) v. Höhn. On old *Acer Negundo*, *Populus*, *Salix* and *Ulmus americana*; Victoria Beach and along the Red River.
- **ludoviciana** Burt. On *Fraxinus pennsylvanica*; Univ. A rare species.
- **mutata** (Peck) Bres. On old bark of *Populus*; Univ.
- **nuda** (Fr.) Bres. On old branch of *Juniperus communis*; Victoria Beach; on bark of *Tilia americana*; Univ.
- **odontioides** Burt. Type collected on old frondose wood; Swan River. L. W. Miller considers this to be a synonym of *Odontia setigera*.
- **piceina** Overholts. On old bark or wood of *Abies balsamea*, ?*Picea* and *Populus*; Beausejour, Victoria Beach.
- **pubera** (Fr.) Sacc. On old *Fraxinus pennsylvanica*, *Populus*, *Quercus macrocarpa*, and *Salix*; Univ.
- **Roumeguerii** Bres. On old *Salix amygdaloides*; Univ.
- **Sambuci** (Pers.) Burt. On *Fraxinus*, *Juniperus*, and on teeth of old Hydnaceae on *Salix*; probably this fungus on *Carex* and *Typha*; Berens River, Kenora, Univ.
- **sanguinea** (Fr.) Bres. On old coniferous wood; near Kenora.
- **subcremea** v. Höhn. and Litsch. On stems of *Symphoricarpos occidentalis* and on old bark of frondose trees; Univ.
- **subsulphurea** (Karst.) v. Höhn. & Litsch. On conifer; Norway House (material all sent to Burt).
- **tenuis** (Pat.) Massee. On old *Pinus Banksiana*; Sandilands Forest Reserve; det. M. K. Nobles. Burt records it as rare.
- **velutina** (DC.) Cooke. On bark and wood of *Populus*; Univ.
- Solenia anomala** (Pers.) Fuckel. Common on old *Betula alba* var. *papyrifera*, *Corylus*, *Prunus*, etc.; Norway House, Univ. eastward.
- **filicina** Peck. On old petioles of *Pteris nodulosa*; Univ. Burt lists Peck's type only.
- Stereum abietinum** Pers. On coniferous wood; Clear Lake.
- **cinerascens** (Schw.) Massee. Common on old *Acer Negundo*, *Populus*, etc.; along the Red River; on *Acer* sp.; Indian Head, Sask.
- **fasciatum** Schw. On old *Betula alba* var. *papyrifera*, *Populus*, etc.; Minaki, Norway House, Univ.
- **frustulosum** (Pers.) Fr. On old wood in Man.; exact locality unknown.
- **fuscum** (Schr.) Quél. Common on *Populus*, etc. Victoria Beach, along the Red River and eastward.
- **gausapatum** Fr. On bark of deciduous trees (?*Quercus*) along the Red River.
- **hirsutum** (Willd.) Fr. On *Betula alba* var. *papyrifera*; Saskatoon, Sask.; on old wood; Kenora and Univ., Man.
- **ochraceoflavum** Schw. Reported by C. H. Kauffman as among a lot of specimens sent him from Norway House.
- **purpureum** Pers. On *Betula alba* var. *papyrifera* in Man. and at Saskatoon, Sask.; on *Populus*, *Prunus*, *Pyrus baccata*, etc., in Man. This fungus causes "Silver-leaf" of cultivated apples and plums, and is somewhat injurious at Morden and Winnipeg. The fungus has been found fruiting on apple branches pruned out and thrown in a brush-pile.
- **radiatum** Peck. On old wood; Kenora.
- **rufum** Fr. Very abundant on dead branches of *Populus* in Man., found also in Sask.; rare on *Salix* sp.; Univ., Man.
- **rugosiusculum** Berk. & Curt., perhaps only a form of *S. purpureum*. On old wood; Kenora, Norway House, Man.; on *Betula alba* var. *papyrifera*, Saskatoon, Sask.

Stereum sanguinolentum (Alb. & Schw.) Fr. On Picea; Berens River; on undertermined conifer; Kenora, Victoria Beach.

— *versiforme* Berk. & Curt. On Salix, etc.; Roblin, Univ., Vista.

Thelephora caryophyllea (Schaeff.) Fr. On sandy soil in coniferous woods; Norway House, Victoria Beach.

— *intybacea* (Pers.) Fr. In woods; Kenora, Norway House, Univ.

— *?multipartita* Schw. In woods; Univ.

— *palmata* (Scop.) Fr. On the ground in frondose woods; Univ.

— *terrestris* (Ehrenb.) Fr. On decaying or charred wood of *Pinus Banksiana*, etc.; Norway House, Victoria Beach eastward.

Clavariaceae

Clavaria abietina Pers. In coniferous woods; Ingolf, Victoria Beach.

— *apiculata* Fr. Common on coniferous wood across Man.

— *?byssiseda* Pers. On debris in mixed woods; Clear Lake.

— *cristata* (Holmsk.) Pers. Common in woods; Univ. eastward. The form *cinerea* is especially common in deciduous woods along the Red River.

— *decurrens* Pers. On moss in sandy woods of *Pinus Banksiana*; east of Beausejour.

— *flava* Schaeff. On old wood; Clear Lake, Victoria Beach.

— *formosa* Pers. In mixed woods; Clear Lake.

— *fumosa* Pers. In woods; Kenora.

— *ligula* Schaeff. Common in coniferous woods; Norway House to Victoria Beach eastward.

— *muscoides* L. On decayed wood; Lac du Bonnet.

— *Patouillardii* Bres. Common in deciduous woods; Univ. The mycelium whitens the leaf-mold.

— *pistillaris* (L.) Fr. In coniferous woods; Clear Lake and eastern Man.

— *pulchra* Peck. On bare soil; Norway House; det. E. A. Burt.

— *pyxidata* Pers. Common on old wood; Univ. north and eastward. See Buller (82, vol. II).

— *stricta* Pers. On decayed wood; Norway House to Univ.

— *?suecica* Fr. On leaf-mold; Victoria Beach; determined with doubt by W. C. Coker.

Pistillaria ?clavulata Ell. On leaves of *Fraxinus pennsylvanica* and *Populus balsamifera* recently fallen and caught on branches of shrubs; Univ.; Sept. 23. Spores mostly $10 \times 3\frac{1}{2}$ – 4μ . *P. ovata* Pers. is similar.

— *culmigena* (Mont. & Fr.) Berk. On dead leaves of *Poa pratensis* and other grasses; Univ. Plants c. 1 mm. high, whitish, clavate; spores hyaline, irregular, roundish, 4 – 6μ .

— *micans* (Pers.) Fr. On dead stems of *Aretium*, *Convolvulus sepium* and *Urtica gracilis*; Univ. A fine little species, red and shining; spores 10 – $11 \times 6 \mu$.

— *typhuloides* (Peck) Burt. On old stems of *Epilobium angustifolium*; Norway House. Plants small, waxy-white.

Pterula penicillata Berk. in Lloyd. In woods; Whitemouth, det. C. G. Lloyd; Clear Lake, det. as probably this species by W. C. Coker.

Typhula filiformis (Bull.) Fr. On fallen leaves of *Populus*, etc.; Univ.; det. E. A. Burt.

— *gyrans* (Batsch) Fr. From sclerotia on dead leaves of *Ulmus americana*, etc.; Univ.; det. E. M. Wakefield.

— *?lignicola* Killerm. On decaying deciduous wood; Univ. Plants whitish to yellowish; spores c. $6 \times 2 \mu$. Seems to fit the description in Zeits. Pilzkunde, 18: 103.

— *phacorrhiza* (Reich.) Fr. Abundant in sawdust and soil in an ice-house; Univ. Slender yellowish-brown Typhulae arise from orange-brown sclerotia up to 6×3 mm.; spores 10 – 12×4 – 6μ .

Hydnaceae

Auriscalpium vulgare S. F. Gray (*Hydnum Auriscalpium* (L.) Fr.). Not uncommon from more or less buried cones; Clear Lake, Victoria Beach and eastern Man.

Caldesiella ferruginosa (Fr.) Sacc. On old ?*Populus*, etc.; Victoria Beach; three collections

— *viridis* (Alb. & Schw.) Pat. On old bark of *Abies balsamea*; Victoria Beach.

Calodon caeruleum (Horn.) Quél. Under conifers; Norway House.

— *ferrugineum* (Fr.) Quél. (probably; near *C. scrobiculatum*). In woods; Ingolf.

- Calodon variegator** (Secr.) Quél. In coniferous woods; Ingolf, Norway House. Determined as *Hydnum connatum* Schultz, which Bourdot and Galzin include under *C. variegator*; also stated to be the same as *H. cyathiforme* Schaef., but Bourdot and Galzin keep that species separate.
- **velutinum** (Fr.) Quél. Common on the ground in coniferous woods; Victoria Beach eastward.
- **zonatum** (Batsch) Quél. In mixed woods; Ingolf, Ont.; Lake Waskesiu, Sask.
- Dentinum repandum** (Fr.) S. F. Gray. Common in coniferous woods; Norway House to Victoria Beach eastward.
- Grandinia Brinkmannii** (Bres.) Bourd. & Galz. On old Populus; Univ.
- **farinacea** (Fr.) Bourd. & Galz. On old deciduous wood; Univ.
- **helvetica** (Pers.) Fr. On fallen bark of *Ulmus americana*; Winnipeg.
- Hericium coralloides** (Scop.) S. F. Gray. Not common; Laurier, and probably at Victoria Beach.
- **laciniatum** (Leers) Banker. Occasional on old wood; Clear Lake, Univ., Victoria Beach. Spores from spore prints $4-4\frac{1}{2} \times 3\frac{1}{2}-4 \mu$, smaller than in *H. coralloides*.
- Hydnum albonigrum** Peck. On the ground; Victoria Beach. These seven species left in the old genus *Hydnum* doubtless have been or will be transferred to other genera.
- **caryophylleum** Berk. & Curt. Kildonan Park, Winnipeg; det. E. A. Burt.
- **ferrugipes** Coker. In coniferous woods; Victoria Beach. A fine species: pileus large, lavender when fresh, then creamy-buff; spines pallid at the tips; stem rusty-brown; spores rough, subglobose, $4-5 \mu$.
- **floriforme** Schaef. Victoria Beach; habitat not noted.
- **Kauffmani** Peck. On old wood; Winnipeg; det. C. G. Lloyd, who (Myc. Notes, 67: 1144) considers it probably a synonym of *H. (Steccherinum) pulcherrimum*.
- **mirabile** Fr. Under conifers; Norway House; det. E. A. Burt.
- **scrobiculatum** Fr. On the ground in mixed woods; Victoria Beach.
- Mucronella minutissima** Peck. On bark of deciduous tree; Winnipeg. A. H. R. Buller collected a small amount of this species on Oct. 16, 1909, on the bark of a standing, probably living, tree. It was determined by G. F. Atkinson. It has been sought many times since, without avail.
- Odontia alutacea** (Fr.) Bourd. & Galz. On old bark of *Thuja occidentalis*; West Hawk Lake.
- **arguta** (Fr.) Quél. Common on old *Acer Negundo*, Populus, Salix, etc.; Univ., Winnipeg.
- **bicolor** (Fr.) Bres. On old wood of Populus; Berens River.
- **ciliolata** (Berk. & Curt.) L. W. Miller. On decayed wood; Victoria Beach.
- **crustosa** (Fr.) Quél. On old ?Populus, etc.; Univ.
- **fimbriata** (Pers.) Fr. On decaying *Populus tremuloides*, etc.; Kenora, Univ., Winnipeg.
- **floccosa** Bourd. & Galz. On decaying wood; Minaki. Dr. Miller writes that this species was not previously recorded for North America.
- **fusco-atra** (Fr.) Bres. Common on old Populus, etc.; Swan River, Univ., Winnipeg.
- **hydroides** (Cooke & Massee) v. Höhn. On old bark; Univ., Vivian.
- **lactea** Karst. (sensu Litschauer). On old Populus; Univ.
- **livida** Bres. On old deciduous wood; Univ.
- **papillosa** (Fr.) Bres. On deciduous wood in Man., probably at Univ.
- **Queletii** Bourd. & Galz. On decaying wood; Univ.
- **setigera** (Fr.) L. W. Miller (*Peniophora setigera* (Fr.) Bres.; see also *P. odontoides*). On ?*Acer Negundo*, *Alnus incana*, Populus, etc.; Berens River, Kenora, Univ.
- **uda** (Fr.) Bres. On old ?Populus; Univ.
- Oxydientia albiviride** (Morg.) L. W. Miller. On *Abies balsamea* and on old *Polyporus Schweinitzii* at base of *Abies balsamea*; Berens River, Victoria Beach.
- **?stenodon** (Pers.) L. W. Miller. On old deciduous wood; Univ. Spores not found.
- Phlebia merismoides** Fr. On old deciduous wood and bark; Kenora, Univ.
- **strigosozonata** (Schw.) Lloyd. Common, especially on fallen Populus, also on Betula, Pyrus, etc.; along the Red River, Victoria Beach.
- Radulum casearium** (Morg.) Lloyd. Common on Populus, etc.; Univ., Victoria Beach, eastern Man.
- **spathulatum** (Fr.) Bres. On old *Acer Negundo*, Populus, etc.; Univ., Winnipeg.

Sarcodon fennicum (Karst.) Bourd. & Galz. In coniferous woods; Ingolf, Victoria Beach. This species has a bitter taste.

— **imbricatum** (Fr.) Quél. In coniferous woods; Clear Lake, Victoria Beach and eastern Man.

— **Underwoodii** Banker. Under conifers; Victoria Beach.

Steccherinum ochraceum (Fr.) S. F. Gray. Common on wood of *Populus* and other deciduous trees; Univ. to Victoria Beach eastward.

— **pulcherrimum** (Berk. & Curt.) Banker. On old *Betula alba* var. *papyrifera*, etc.; Victoria Beach.

— **pusillum** (Brot.) Banker. On branch of frondose tree or shrub; Victoria Beach.

— **septentrionale** (Fr.) Banker. On old *Betula alba* var. *papyrifera* at Victoria Beach; on *Acer Negundo* at Winnipeg (illustrated and described by Buller, 82, vol. II); rarely seen in Man.

— **setulosum** (Berk. & Curt.) L. W. Miller. On old wood; Swan River. Apparently known only from Alabama, Iowa, and west central Manitoba.

Polyporaceae

Daedalea confragosa (Bolt.) Fr. Common on *Salix* in eastern Man. The form known as *Trametes rubescens* Fr. is also present. *D. confragosa* may be a "winter annual" in Man. (82, vol. II: 117).

— **unicolor** (Bull.) Fr. Common on *Acer Negundo* in Man., less common on other dead deciduous trees; on *Alnus incana*; Berens River and Clear Lake, Man.; on *Betula alba* var. *papyrifera* and *Populus tremuloides* in Sask. A fallen *Acer Negundo* may become covered on the lower side along the whole length of the trunk. Buller and Cameron (100) found that *D. unicolor* in the dry condition kept its vitality in the dark at room temperature for over eight years.

Favolus canadensis Klotz. On dead branches of *Acer Negundo*, *Salix*, and other deciduous trees in Man.; on *Betula alba* var. *papyrifera*, Katepwa, Sask.

Fistulina hepatica (Schaeff.) Fr. One collection on *Quercus macrocarpa*; Headingly; Sept.; coll. Dr. W. J. Grant.

Fomes applanatus (Pers.) Wallr. Common on *Populus* and other deciduous wood in Man. and Sask.

— **conchatus** (Pers.) Gill. On dead *Viburnum Lentago*; Univ.

— **connatus** (Weinm.) Gill. Occasional along the Red River on the bark of trunks of dead *Acer Negundo*.

— **fomentarius** (L.) Gill. Common on trunks of *Betula alba* var. *papyrifera*, occasional on *Populus tremuloides*, in Man. and Sask. Illustrated and discussed by Buller (82, vols. II and IV).

— **fulvus** (Scop.) Gill. (*F. pomaceus* (Pers.) Lloyd). On *Prunus americana*; Melita, Univ.

— **igniarius** (L.) Gill. Common and often injurious on *Betula alba* var. *papyrifera* and *Populus tremuloides* in Man. and Sask.; also on *Salix* spp. in Man., and on *Alnus incana* and *Betula fontinalis* in Sask. Illustrated, and an investigation of spore discharge in Man. reported, by Buller (82, vol. II: 113).

— **igniarius** var. **nigricans** Fr. Also common on *Betula alba* var. *papyrifera* and *Populus* in Man. and Sask.

— **Pini** (Thore) Lloyd var. **Abietis** Karst. On *Picea* around Lake Winnipeg and eastward.

— **pinicola** (Swend.) Cooke. Common on dead trunks of conifers including *Abies balsamea*, *Picea canadensis* and *Pinus* spp. in Man. and Sask. A form with paler, unvarnished pilei is common on *Populus balsamifera* in coniferous areas in Man., and has been found on *P. tremuloides* and *Betula* sp. in northern Sask.

— **Ribes** (Schumacher) Cooke. One collection at the base of *Ribes vulgare*; Univ.

— **scutellatus** (Schw.) Cooke. Not uncommon on dead branches of *Acer Negundo*, *Amelanchier alnifolia*, *Celastrus scandens*, etc., in Man.

— **subroseus** (Weir) Overholts (*Trametes subrosea* Weir, *T. carnea* Auct. Amer.). Common on dead *Abies balsamea* and other coniferous wood, such as railway ties, in Man. and northern Sask.

Lenzites betulina (L.) Fr. Common on *Betula alba* var. *papyrifera*, occasional on *Populus*, in Man.

- Lenzites saepiaria** (Wulf.) Fr. Common on coniferous wood in Man. and Sask. A collection from Swan River with very thin pilei may possibly belong to *L. abietina*.
- **trabea** (Pers.) Fr. On deciduous or sometimes on coniferous wood in Man. This and the preceding species were studied by Dr. Mounce and Miss Macrae (Can. J. Research, C, 14: 215).
- Merulius ambiguus** Berk. On bark of conifer; southeastern Man.; coll. I. L. Connors; det. E. A. Burt.
- **aureus** Fr. On fallen Picea; Clear Lake; on *Pinus Banksiana*; Victoria Beach; det. Dr. Mounce.
- **confluens** Schw. Occasional on old deciduous wood; Univ.
- **corium** Fr. On branch of deciduous tree or shrub; Univ.; det. E. A. Burt.
- **fugax** Fr. On old *Pinus Banksiana*; Sandilands Forest Reserve; det. M. K. Nobles.
- **lacrymans** (Wulf.) Fr. Not common in Man. and Sask. Dry rot caused by this fungus caused \$2,000 damage to a basement floor in Winnipeg; it destroyed the boarding on the walls of a cellar in Yorkton, Sask., and the fungus has been collected at Regina, Sask. These are the only definite reports.
- **niveus** Fr. On dead branches of *Alnus incana*, etc.; Kenora to Norway House and Winnipeg, Man.; at Prince Albert, Sask.; coll. E. C. Stakman.
- **pilosus** Burt. On decayed wood; Norway House; det. E. A. Burt.
- **tremellosus** Schrad. Common on dead *Betula alba* var. *papyrifera*, *Populus*, etc.; across Man.
- Polyporus abietinus** (Dicks.) Fr. Common on dead wood of conifers wherever they grow in Man. and at Lake Waskesiu, Sask.; not infrequent on coniferous railway ties.
- **adustus** (Willd.) Fr. Common on dead *Populus balsamifera*, *P. tremuloides*, etc., in Man. and Sask. When growing in the dark on poplar supports in a cellar, the pilei are almost white.
- **albellus** Peck. Not uncommon on dead *Betula alba* var. *papyrifera* and *Populus*; Norway House to Univ.
- **albiceps** Peck. Two small collections of this rare species at Univ., and one at Berens River. It appears about the end of July.
- **anceps** Peck. This rather rare species has been collected on bark of dead conifers at Ingolf and Kenora, western Ont., and at Vivian, Man. (See Kauffman, Mycologia, 18: 27.)
- **arcularius** (Batsch) Fr. On dead *Betula alba* var. *papyrifera* and *Salix*; Univ. and around Lake Winnipeg. This species appears in early spring; it has been collected from May 7 to June 2.
- **betulinus** (Bull.) Fr. Common on *Betula alba* var. *papyrifera* in eastern Man. north to Norway House, and in northern Sask. The spore discharge in Man. begins in the autumn, is interrupted by winter, and continues in the spring.
- **biformis** (Klotz.) Berk. On deciduous wood; Norway House and Winnipeg.
- **brumalis** (Pers.) Fr. On fallen branches of *Betula alba* var. *papyrifera*, *Quercus macrocarpa*, etc.; eastern Man. to Univ. and Victoria Beach.
- **caesius** (Schrad.) Fr. On decayed wood; Norway House.
- **cinnabarinus** (Jacquin) Fr. Not uncommon on dead conifers, *Populus*, etc.; eastern Man., Univ., and around Lake Winnipeg.
- **circinatus** Fr. On the ground, growing from buried wood; Minaki and Victoria Beach.
- **conchifer** (Schw.) Fr. On fallen branches of *Ulmus americana*; not uncommon along the Red River at Winnipeg, but not yet found in the more carefully surveyed woods of the Univ.
- **cuticularis** (Bull.) Fr. One collection, at Victoria Beach in 1917.
- **dichrous** Fr. Rather common on dead *Salix* and other deciduous trees along the Red River and eastward.
- **elegans** (Bull.) Fr. Frequent on dead, sometimes partially buried, branches and wood of *Acer Negundo* and other deciduous trees; Norway House to Univ., and at Swan River.
- **fibrillosus** Karst. Two collections on dead conifers; Victoria Beach; July and Sept. 1927. This rather striking species seems to be rare.
- **floriformis** Qué. Two collections on dead *Populus*; Univ.; July and Aug., 1927.
- **fumosus** (Pers.) Fr. One collection on old deciduous wood, perhaps *Ulmus americana*; Univ.
- **gilvus** (Schw.) Fr. On dead *Acer Negundo* and *Salix*; Univ. Not commonly found in Man.

- Polyporus glomeratus** Peck. On fallen *Populus*; Univ.; on stump of deciduous tree; Winnipeg. This is a somewhat rare species; see Overholts (Torreya, 17: 202).
- **guttulatus** Peck. On dead wood, probably coniferous; Birds Hill and Minaki. *P. alutaceus* Fr. may be the same.
- **hirsutus** (Wulf.) Fr. Common on *Populus tremuloides*, *Ulmus americana*, and wood of other deciduous trees in the eastern half of Man.
- **immitis** Peck. Two small collections on stump and wood of *Picea canadensis*; Clear Lake; det. I. Mounce. (See Kauffman, Mycologia, 18: 28.)
- **melanopus** Fr. At the base of *Salix*; Clear Lake; apparently also sometimes from buried sticks of deciduous trees or shrubs at Univ.; but the latter specimens approach *P. varius*, q.v.
- **nidulans** Fr. On dead *Betula alba* var. *papyrifera*; Berens River; on dead *Viburnum Lentago*; Univ.
- **osseus** Kalchbr. On old wood in coniferous areas at Kenora and Victoria Beach.
- **ovinus** (Schaeff.) Fr. Not uncommon in damp seasons on the ground (probably from buried wood or roots) in coniferous areas at Minaki and Victoria Beach.
- **pargameneus** Fr. Very common on dead *Betula alba* var. *papyrifera*, *Populus balsamifera*, *P. tremuloides*, etc., across Man. and in Sask. The hymenium is often a bright purple color, especially when it matures in late autumn.
- **perennis** (L.) Fr. Common on sandy soil in coniferous areas in eastern Man. and at Clear Lake. The fungus is often, but not necessarily, on burnt areas. It probably arises from wood under ground, but this point has not been investigated in Man.
- **picipes** Fr. Common across Man. on old deciduous, and perhaps also coniferous, stumps and logs.
- **planellus** (Peck) Sacc. Common on fallen branches of *Amelanchier alnifolia*, *Quercus macrocarpa* and other frondose species at Univ., St. Norbert and Victoria Beach.
- **pubescens** (Schumacher) Fr. Common on dead wood of deciduous trees in Man.; also collected on the injured base of a living tree of *Prunus nigra*; Univ.
- **resinosus** (Schrader) Fr. Rare on stumps of *Quercus macrocarpa* or logs of ?*Acer Negundo*; Univ.
- **Schweinitzii** Fr. Occasional, but when present often large and conspicuous, on or near stumps or trunks of *Abies balsamea*, *Picea canadensis*, and probably other conifers; Clear Lake and Victoria Beach eastward.
- **semipileatus** Peck. Three collections on old wood of *Populus*, *Amelanchier*, etc.; Univ. and Victoria Beach.
- **spumeus** (Sow.) Hornem. One specimen, and that not very satisfactory; collected at Winnipeg in 1907.
- **squamosus** (Huds.) Fr. Rare on deciduous trees about Winnipeg. Not seen in recent years, but Dr. Buller, who knows the species also in Europe, formerly found a few small specimens. Winnipeg must be near the northern limit of this species.
- **subchartaceus** (Murr.) Lloyd. This species, or form of *P. pargameneus*, is fairly common on *Populus*; Univ.
- **sulphureus** (Bull.) Fr. Very rare on deciduous trees, in Man. Two collections only, both from Elm Park, Winnipeg, in 1913 and 1935. One or two other reports of this fungus from Man., but Winnipeg is apparently near the limit of its range.
- **?tephroleucus** Fr. Two specimens, from Minaki and Victoria Beach may belong to this species.
- **tuckahoe** (Güssow) Lloyd. Sclerotia common in soil in Man. from the North Dakota boundary near the Pembina Hills northward to Carman, Oakville, Clear Lake and Swan River, and in wooded areas in Sask. from Saskatoon northward. Güssow (Mycologia, 11: 104) gives good illustrations and description of the sclerotia, and of a pileus which grew from one. He points out that a fruit-body, doubtless of this species, had been obtained as early as 1906. Subsequent to Dr. Güssow's report in 1919, pilei were obtained from potted sclerotia by S. Criddle at Treesbank, Man., by W. P. Fraser with sclerotia from Pontrilas, Sask., by E. T. Howe at Saskatoon, and by Geo. Mayer at Kenville, Man. Mr. Mayer ploughed up a sclerotium about 5 inches in diameter in the summer of 1929; he cut off about one-third and planted it in slightly damp earth; the larger portion was dried for a time, and then also planted, and both were left in a basement. In the spring of 1930 the smaller

portion produced a pileus 3 or 4 inches in diameter; the larger portion produced a pileus $4\frac{1}{2}$ inches in diameter in the early autumn of 1930. This larger portion was left in its pot, and produced a pileus 5 inches high and $5\frac{1}{2}$ inches wide in the summer of 1931, and still another in the summer of 1932, but this time only $2\frac{1}{2}$ inches in diameter. It was left, but Mr. Mayer has reported no more pilei since the three in successive years. He also found pilei in the field four years after breaking, and traced their bases down to the sclerotium six inches in the soil. S. Criddle and G. R. Bisby have also found pilei in nature. Reports have appeared in newspapers several times of the finding of these sclerotia, but they are usually interpreted as pemmican buried by the Indians or early explorers. The sclerotia are sometimes attached to roots, but their hosts or substrata have not been ascertained, although *Populus* has been suggested. They are found more commonly in lighter soil, and have not been reported in the heavy clay near the Red River. Lloyd (Myc. Notes, 6: 954) considers this fungus to belong to *P. tuberaster* Fr., known from Italy and recently from Holland and reported from Japan. So far as the writers know, *P. tuckahoe* is known only from Man. and Sask., but it doubtless occurs also in North Dakota and perhaps in Alberta.

Polyporus tulipiferus (Schw.) Overholts. Everywhere on dead branches of deciduous trees and shrubs, including *Acer Negundo*, *Caragana arborescens*, *Celastrus scandens*, *Prunus nigra*, *Pyrus* sp. and *Ulmus americana* in Man., *Alnus incana* and *Amelanchier alnifolia* at Saskatoon, Sask., *Caragana* sp. at Indian Head, Sask., and *Salix* sp. at St. Gregor, Sask.

— **umbellatus** (Pers.) Fr. One collection of this "compound" *Polyporus* was made at Winnipeg Beach by V. W. Jackson. He found the pilei to be edible.

— **ursinus** Lloyd (*P. lapponicus* Romell). This rare species was collected at Winnipeg in 1908, and at Victoria Beach in 1931; det. L. O. Overholts. Seaver and Shope (Mycologia, 27: 646) state that *Polyporus circinatus* and *P. ursinus* "seem to reach their northern limit of distribution in Wyoming," but both occur in Man.

— **varius** Fr. Common along the Red River, and found at Clear Lake, Matlock and Victoria Beach. The fungus sometimes approaches *P. melanopus* in appearance. It grows from buried sticks or roots, and is usually found in July.

— **velutinus** Fr. Common on *Populus*, *Salix*, etc., in Man.; on *Populus tremuloides* at Sutherland, Sask.

— **versicolor** (L.) Fr. On dead wood, sometimes on living trees, of *Prunus nigra*, *Pyrus baccata*, *Quercus macrocarpa*, etc., across Man.

— **volvatus** Peck. On *Picea canadensis*; rather common at Clear Lake, found also at Ethelbert and Swan River; but considerable search has failed to locate it around Lake Winnipeg or eastward.

Poria ambigua Bres. One collection, rather young, on *Populus*; Univ.

— **aneirina** Fr. On old deciduous wood; Univ.

— **borealis** Overholts in litt. On bark of *Populus*; Univ.

— **calcea** Fr. On a burnt log; Swan River.

— **candidissima** (Schw.) Cooke. On old deciduous wood; Univ.; on old *Picea canadensis*; Berens River.

— **corticola** (Fr.) Cooke. Rather common on old bark and wood of *Populus*, and probably other deciduous trees; Univ. and Winnipeg.

— **eupora** (Karst.) Cooke (*P. attenuata* Peck). Common on bark and wood of *Populus*, etc.; Univ. to Victoria Beach and eastward.

— **ferruginosa** (Schr.) Fr. Common on dead *Acer Negundo*, *Salix*, etc.; along the Red River and at Berens River.

— **ornata** (Peck) Sacc., or near. On old deciduous wood; Univ.

— **prunicola** (Murr.) Sacc. & Trott. On dead branch of *Prunus*; Univ. (See Mycologia, 23: 119.)

— **pulchella** (Schw.) Cooke. On charred coniferous wood; Vivian.

— **punctata** Fr. Fairly common on old *Populus* and *Salix*; Univ. (See Mycologia, 23: 120).

— **purpurea** (Fr.) Cooke. On old *Populus*, etc.; Univ. and Winnipeg.

— **reticulata** Fr. On bark of decayed log of *Populus*; Univ.

— **rhodella** Fr. On bark of ?*Populus*; Swan River. This seems to be the first record of this species in North America.

— **selecta** Karst. Commonly associated with decay of coniferous timbers, and sometimes apparently on old deciduous wood; Univ. to Victoria Beach and eastward.

- Poria semitincta* (Peck) Cooke. Two collections on decaying wood of *Populus*; Univ.
- *Vaillantii* Fr. On rotted coniferous timbers and railway ties; Univ. and Winnipeg, Man.; apparently this species on *Fraxinus campestris*; Pike Lake, Sask.
- *versipora* (Pers.) Fr. Two collections on dead *Populus*; Univ.
- *viticola* (Schw.) Cooke (*Trametes tenuis* (Karst.) Weir). On old *Salix*; Univ.; on charred coniferous wood; Victoria Beach.
- *washingtoniensis* Murr. On old stump of deciduous tree; Univ.
- Porothelium fimbriatum* (Pers.) Fr. On decaying wood of *Betula alba* var *papyrifera*, *Populus*, etc.; Minaki, Victoria Beach.
- Trametes americana* Overholts. Common on railway ties and other coniferous wood; Univ., Winnipeg and eastward. Mounce and Macrae (Can. J. Research, C, 14: 215) found that cultures of this species would not combine with cultures of *Lenzites saepiaria*.
- *hispidula* Bagl. Common on old deciduous wood, probably mostly *Populus* and *Salix*, across Man.; on dead *P. balsamifera*; Foam Lake and St. Gregor, Sask.; on dead *P. tremuloides*; Lanigan, Sask. The form known as *T. Peckii* Kalchbr. is sometimes found.
- *malicola* Berk. & Curt. On dead wood of *Populus*; Univ.
- *serialis* Fr. On old bark of a conifer; Victoria Beach. This rather rare species has been found but once.
- *suaveolens* (L.) Fr. On diseased but living *Salix*; Oakville, Univ.
- *Trogii* Berk. On dead deciduous tree; Gimli and Winnipeg.

Boletaceae

- Boletinus cavipes* (Opatowski) Klotz. Under *Picea*, and possibly other conifers; Clear Lake, Vivian eastward.
- *paluster* Peck. In a Sphagnum bog; Kenora.
- *pictus* Peck. Found only at Kenora; associated trees not recorded. W. H. Snell states that it grows under *Pinus Strobus*. This tree is not uncommon at Kenora.
- *spectabilis* Peck. In bogs under *Larix laricina* and *Picea mariana*; Birds Hill, Ingolf, Norway House.
- Boletus brevipes* Peck. In woods; Minaki.
- *castaneus* Bull. In sandy mixed woods; Victoria Beach.
- *chrysenteron* Bull. One somewhat doubtful collection in sandy woods; Victoria Beach.
- *edulis* (Bull.) Fr. Under *Pinus Banksiana* in sandy soil; Victoria Beach.
- *felleus* Bull. Growing on or through very much decayed wood; Victoria Beach.
- *granulatus* (L.) Fr. In sandy woods; Lac du Bonnet, Victoria Beach.
- *mirabilis* Murrill. One specimen was found in mixed woods at Victoria Beach. Dr. Snell reports (Mycologia, 28: 463) that it was previously known only from Washington and Oregon. Spores very long, $14-23 \times 5-8 \mu$.
- *niveus* Fr. In low mixed woods; Victoria Beach.
- *piperatus* Bull., probably. In leaf mold in frondose woods principally of *Populus tremuloides*; Univ. This was called *B. rubinellus* in "The Fungi of Manitoba."
- *placidus* Bonord., probably. Sent in from Ingolf.
- *scaber* (Bull.) Fr. Fairly common in deciduous or mixed woods; Univ., Victoria Beach eastward. See Buller (82, vol. II).
- *sphaerosporus* Peck. In deciduous woods; Univ. This large *Boletus* with spheroid spores was first found in 1926, and several appeared in the same place in 1927, also in another locality more than a mile away. It has not been seen since.
- *subglabripes* Peck. Sent in from Ingolf.
- *tomentosus* Kauff., probably. Common in coniferous woods; Clear Lake, Victoria Beach, eastern Man. Pileus yellow, viscid, slightly scaly, the flesh turns blue.
- *versipellis* Fr. Common in deciduous woods; Univ., Victoria Beach.

Agaricaceae

Leucosporae

- Amanita bisporiger* Atk. This species, or form of *A. verna*, has been collected in sandy soil under *Pinus Banksiana* at Victoria Beach; Aug.-Sept. Basidia 2-spored; spores $9-12 \times 8-9 \mu$. Plants slender, with an unpleasant odor.

- Amanita muscaria* Fr. Often common across southern Man. in deciduous woods, especially under *Populus*, in Aug. and Sept.; under willows at Rosthern, Sask. Sometimes very large. Pileus usually orange-yellow with whitish scales, as is usual in North America; but rarely the European form is found, with bright orange to scarlet pileus with yellow patches. Criddle (107) found that cattle may eat *A. muscaria*, with considerable subsequent illness.
- *phalloides* Fr. One collection only, from Minaki in Sept., seems definitely to belong to this deadly species.
- *porphyria* Fr. Victoria Beach to Kenora; Aug.-Sept. Pileus rather small (4-6 cm.), brownish; stem slender, annulus slightly above centre.
- *russuloides* Peck. In sandy soil, Victoria Beach. Pileus pale yellowish, margin very striate; annulus evanescent; volva thin and circumscissile. What appears to be this species is sometimes found in clay soil, Univ.
- *solitaria* Fr. Two or three plants found Oct. 1, 1927, at Kenora. Pileus to 15 cm. wide, white with gray warts. Spores $10-12 \times 8-9 \mu$.
- *verna* Fr. Minaki; Sept. Pileus pure white, glabrous, viscid, margin even but striate above the margin; volva a large cup. This deadly species is rarely seen.
- *virosa* Fr. Minaki; Sept. Pileus white, somewhat conical; annulus represented by shreds on the stem.
- Amanitopsis strangulata* Fr. In woods; Univ. and Kenora. Pileus with scales; volva not conspicuous; spores $10-12 \mu$.
- *vaginata* Fr. var. *alba* Sacc. Common in deciduous woods in Man.
- *vaginata* var. *fulva* Sacc. The tawny form occurs in coniferous woods.
- *vaginata* var. *livida* Sacc. Also in coniferous woods.
- Armillaria caligata* Fr. Sandy woods; Victoria Beach; Sept. Pileus to 12 cm. wide, spotted with brown scales; stem stout, scaly below the annulus; spores $7-8 \times 3\frac{1}{2}-4\frac{1}{2} \mu$.
- *foetalis* Fr. Victoria Beach; July-Sept. Pileus small, reddish, viscid; spores $4-5 \mu$, globose.
- *mellea* Fr. Abundant in all its variations, and often injurious to living trees; throughout Man. and Sask. in autumn. The rhizomorphs are found frequently in the woods. The mycelium within wood soon becomes phosphorescent when exposed by breaking the wood (the "fox-fire" of woodsmen), until it becomes protected by a thin black blocking layer. The young mushrooms are sought as food, particularly by people who have come from central Europe. See Buller (82, vols. II and III).
- Cantharellus aurantiacus* Fr. Common in coniferous woods from Norway House to Kenora and Clear Lake; Aug.-Oct. $5-7 \times 3-4 \mu$.
- *cibarius* Fr. The Chanterelle is sometimes abundant in coniferous woods in eastern Manitoba; Aug.-Sept. Not found to contain larvae; Kauffman reports larvae almost always present in Michigan, but not in Europe.
- *cinnabarinus* Schw. One collection; Victoria Beach. Spores $8-12 \times 4-5 \mu$.
- *infundibuliformis* Fr. In and around bogs near the Ontario boundary; Sept.
- *tubaeformis* Fr. In frondose and mixed woods, Victoria Beach eastward; Sept.
- *umbonatus* Fr. Common in coniferous woods, often on mossy rocks, sometimes on wood; Clear Lake, Norway House, eastern Manitoba.
- Clitocybe adirondackensis* Peck. Univ.; Aug.-Sept. Pileus hygrophanous with a zone near the edge when moist; spores $4-6 \times 3-4 \mu$.
- *falbidula* Peck. In frondose woods; Univ. Pileus small, infundibuliform, centre darker; spores $5-6 \times 3-4 \mu$. Kauffman records this species from woods of hemlock and cedar, so the Manitoban specimens may belong to another species.
- *albissima* Peck. One collection; Univ. Pileus about 6 cm. wide, margin sub-zonate; spores minutely echinulate.
- *candicans* Fr. Univ. and eastern Man.; Aug.-Sept. Pileus shining micaceous-white; gills crowded; spores $5-6 \times 3-4 \mu$.
- *cartilaginea* (Bull., non Fr.) Bres. Victoria Beach; Sept. Plants caespitose, cartilaginous, sordid; spores $5-7 \mu$.
- *catina* Fr. Victoria Beach; Sept. Resembles *C. infundibuliformis*, but pileus paler, spores smaller ($4-6 \times 3 \mu$).
- *clavipes* Fr. Observed at Ingolf by Dr. J. E. Lange and G. R. Bisby.

- Clitocybe ?compressipes* Peck. Mixed woods; Vivian and Kenora. Pileus small, brownish; stem compressed; spores $4-5 \times 2\frac{1}{2}-3\frac{1}{2} \mu$.
- *dealbata* Fr. Sandy woods, Beausejour. Plants small, white, becoming darker and sordid when dry; spores $4-5 \times 3 \mu$.
- *decora* Fr. One collection at Gimli by T. Johnson; Sept. Pileus brownish-yellow with scales; spores $c. 6 \times 4 \mu$.
- *?ditopoda* Fr. Mixed woods; eastern Man. Pileus hygrophanous, flaccid, 2-4 cm. wide, depressed, drab especially at centre and streaked with brownish fibrils; stem 4-5 cm. $\times 3-5$ mm.; gills white, slightly decurrent; spores mostly $6 \times 5 \mu$.
- *ectypoides* Peck. On rotten logs; Victoria Beach; Aug. Pileus virgate with blackish fibrils and points; spores $8-9 \times 4-5 \mu$.
- *?farinacea* Murrill. On sawdust every autumn in an ice-house; Univ. Pileus hygrophanous, odor very farinaceous, pale watery tan, $2\frac{1}{2}-5\frac{1}{2}$ cm.; gills close; stem tapering upward, whitish; spores $6-8 \times 3-4 \mu$. The close gills and substratum make the name doubtful.
- *?fragrans* Fr. In frondose woods; Univ. Pileus plane, whitish, odor of anise; gills close, sub-decurrent; spores $6-7 \times 4 \mu$.
- *gigantea* Fr. At Minaki and Kenora; apparently this species also at Clear Lake, attaining a very large size. Aug.-Oct.
- *infundibuliformis* Fr. Ingolf; probably common.
- *maxima* Fr. Occasional around Lake Winnipeg and probably elsewhere.
- *?metachroa* Fr. In mixed woods near Lac du Bonnet; Sept. Pileus 15-20 mm., hygrophanous, livid translucent watery-brown, fading on drying, glabrous; gills arcuate decurrent, rather distant; stem 15-25 $\times 2-3$ mm., concolor, pruinose-silky, glabrescent, taste mild; spores $4-5 \times 2-3 \mu$.
- *morbifera* Peck. Amongst grass; Winnipeg and Univ.; Sept.; reputed to be poisonous.
- *multiceps* Peck. Common on the Univ. campus, perhaps from buried wood; in the forest at Ingolf. Pilei densely caespitose.
- *multiformis* Peck. Frondose woods; Univ.; July. Pileus hygrophanous, alutaceous, to 10 cm. wide, often crimped at edge, minutely silky; gills crowded, white then yellowish; stem stuffed; spores $c. 6 \times 4 \mu$.
- *odora* Fr. Very common in woods; Univ., Victoria Beach and eastward. Plants greenish to whitish with the characteristic odor.
- *odora* var. *anisearia* Peck. Found at Univ.; probably common.
- *pinophila* Peck. Under *Pinus Banksiana*; eastern Man.
- *praecox* Kauff. Amongst grass; Victoria Beach; June. Pileus dark brown with minute scales; odor and taste farinaceous; spores $8-10 \times 5-6 \mu$.
- *pulcherrima* Peck. On old wood; Victoria Beach; Aug.
- *sinopica* Fr. Clear Lake and Victoria Beach; July-Aug. Gills very crowded, narrow, becoming brownish; pileus brick red.
- *?Trogii* Fr. Specimens at Ingolf were considered by Dr. Lange as probably this species.
- *truncicola* Peck. On wood; Univ., Winnipeg and Victoria Beach. Spores $4-5 \times 3-4 \mu$.
- Collybia ?acervata* Fr. Doubtful specimens from Victoria Beach and Univ.; June.
- *?aquosa* Fr. Possibly a form of *C. dryophila*. Univ.; June.
- *albiflava* (Peck) Kauff. Victoria Beach; Aug.-Sept. Pileus large; stem bulbous; spores $8-9 \times 5-6 \mu$; cystidia crystallate at apex.
- *atrata* Fr. This black *Collybia* occurs in burnt places; Clear Lake (spores $6-8 \times 4-5 \mu$), Victoria Beach.
- *atratooides* Peck. On old wood, sometimes on charcoal; Univ., Victoria Beach. Spores sub-globose, $c. 5 \mu$.
- *butyracea* Fr. Common; Univ. to Norway House and Kenora.
- *?cirrhata* Fr. A doubtful collection at Victoria Beach. No sclerotia were present.
- *colorea* Peck. Victoria Beach eastward. Pileus 1-2 cm., hygrophanous, watery-brown then yellow-brown; stem concolor; spores $3-5 \times 2\frac{1}{2}-3 \mu$.
- *confluens* Fr. Typical specimens rather common in coniferous areas; Victoria Beach eastward; spores $c. 3-5 \times 3 \mu$.

- Collybia Cookei** (Bres.) J. Arnold (Mycologia, 27:388; *C. cirrhata* var. *Cookei* Bres.). Univ., Gimli, and eastward. Common, sometimes at least on remains of other agarics; always arising from a yellowish sclerotium.
- **dryophila** Fr. Very common in deciduous woods throughout the spring and summer; variable, and sometimes with the proliferations formerly known as *Tremella mycetophila*. See Buller (82, vol. III).
 - **familia** Peck. On decaying wood in coniferous areas, eastern Manitoba.
 - **hariolorum** Fr. Common; Berens River, Clear Lake, Univ.; July-Oct. Pileus soft, rather small; stem white tomentose; spores narrow.
 - **hygrophoroides** Peck. Common in June (only) along the Red River and probably in other deciduous woods. Pileus reddish; stem rooting; spores $5-7 \times 3-4 \mu$; cystidia pointed.
 - **longipes** Fr. One specimen, amongst *Acer Negundo* and *Salix*; June 27, 1935; Univ. Pileus $7\frac{1}{2}$ cm. wide, tan with date-brown centre, appearing velvety but hairs few; stem extending 8 cm. above ground and 8 below, 8 mm. wide at apex, 14 mm. at ground line, solid, date-brown, with tomentum; gills almost free, becoming yellowish; spores $9-11 \times 6-7 \mu$; basidia 4-spored; cystidia on sides and edges of gills. This fits Kauffman's description fairly well, but not Rea's.
 - **maculata** Alb. & Schw. This large "spotted" *Collybia* is not uncommon in coniferous woods; Victoria Beach and Kenora; July-Sept.
 - **myriadophylla** Peck. Common on coniferous wood; Clear Lake, around Lake Winnipeg and eastward; found once on deciduous wood; Univ. June-Oct. Gills lilac, very crowded; spores c. $3-4 \times 2 \mu$.
 - **scorzonerea** Batsch. Possibly only a form of *C. maculata*; Minaki; Sept.
 - **tuberosa** Fr. Common in autumn, eastern Manitoba to Norway House. Pileus small, 4-10 mm., with slender stem arising from an elongated dark reddish-brown sclerotium in the remains of various Hymenomycetes, including *Hydnum* sp. and *Lactarius piperatus* parasitized by *Hypomyces lactifluorum*. Usually the substratum is undeterminable.
 - **velutipes** Fr. Common across southern Man., especially on *Salix* and *Populus*, sometimes on *Ulmus*; sometimes a winter annual, surviving the Manitoba winter and shedding spores about the first of April. See Buller (82, vol. III).
- Hygrophorus borealis** Peck. Univ., Victoria Beach, eastern Man. Pileus 1-4 cm., hygrophanous, not viscid, even, watery white; gills distant; stem 3-5 cm. \times 3-5 mm.; spores $7-10 \times 4-6 \mu$.
- **Cantharellus** (Schw.) Fr. On wood; Victoria Beach. Pileus small, yellow to orange, smooth or minutely squamulose; spores $10-11 \times 6-7 \mu$.
 - **?ceraceus** Fr. Doubtful specimens from Univ. and Minaki.
 - **chrysodon** Fr. In coniferous woods; Clear Lake, Victoria Beach eastward. Sometimes stored by red squirrels. Known by the golden granules on pileus and stem; spores $8-10 \times 4-5 \mu$. See Buller (82, vol. II).
 - **coccineus** Fr. Typical specimens of this brilliant species occur in woods or the edge of bogs; Univ., eastern Man.; Sept.-Oct.
 - **Colemannianus** Bloxam. Univ.; Oct. Pileus $2-3\frac{1}{2}$ cm. wide, smoky-purplish, subviscid, umbonate; gills distant, intervenose; spores $8-9 \times 5-6 \mu$.
 - **conicus** Fr. Rather common, Univ. eastward and northward; July-Sept. Pileus conical, reddish-yellow then black.
 - **eburneus** Fr. One collection; Victoria Beach; Sept.
 - **?flavodiscus** Frost. Victoria Beach; Sept.
 - **?fuligineus** Frost. Univ., Minaki.
 - **fusco-albus** Fr. var. **occidentalis** Kauff. Amongst moss, edge of a bog east of Beausejour. Pileus 2-3 cm., viscid, gray-brown, darker on disc; gills white, decurrent; stem white, somewhat scabrous-pruinose; spores $6-8 \times 4-4\frac{1}{2} \mu$.
 - **hypothejus** Fr. In coniferous woods; Ingolf, Kenora; late autumn. Pilei brownish; gills bright yellow. Kauffman considers this species to be southern; but Dr. Lange found Ingolf specimens to agree with those in Denmark.
 - **Laurae** Morg. Frondose woods; Univ.; Oct. Pileus reddish brown, glutinous; stem also glutinous; spores $6-9 \times 4-5 \mu$, apiculate.

- Hygrophorus miniatus* Fr. Occasional; Victoria Beach to Ingolf and Kenora, and at Mile 412 on the Hudson's Bay Railway.
- *nigrescens* Qué. This fine species was found in the Univ. woods, Aug. 3, 1928. Details of the specimens are given in "The Fungi of Manitoba." The colors and stature are as shown by Bresadola (Icon. Mycol. pl. 350), except that the Manitoba plants were not campanulate. The spores were $9-11 \times 6-7\frac{1}{2} \mu$, rather shorter than described. A striking fungus, certainly near to *H. nigrescens*.
 - *nitidus* Berk. & Curt. Coniferous areas; Clear Lake, Victoria Beach, Kenora. Pileus small, umbilicate, yellow but fading.
 - *pallidus* Peck. Univ.; Oct. Pileus smoky-purple when fresh, spores about $6 \times 4 \mu$.
 - *paludosus* Peck. Damp woods; Victoria Beach; Sept. Pileus viscid, with yellow gluten; stem with yellow dots at apex, some of which turn black; spores $8-11 \times 4-5 \mu$.
 - *Peckii* Atk. Birds Hill, June; Kenora, Oct. Small reddish-brown viscid plants.
 - *pratensis* Fr. Clear Lake and Kenora; Sept.
 - *pratensis* var. *pallidus* Berk. & Broome. Univ., Victoria Beach; Sept.-Oct. Pileus somewhat turbinate, whitish; spores $7-9 \times 4-6 \mu$.
 - *psittacinus* Fr. This fine parrot-green plant has been seen but twice; Kenora; Sept.
 - *pudorinus* Fr. Not uncommon in mixed woods; Clear Lake, Victoria Beach, Minaki; Sept.
 - *puniceus* Fr. In deciduous woods; Univ. Pileus viscid, scarlet; spores $9-11 \times 5-6 \mu$.
 - *Russula* (Schaeff.) Qué. Kenora and Minaki; Sept. Often placed in *Tricholoma*.
 - *speciosus* Peck. In bogs; Minaki, Kenora; late autumn. The orange-colored pilei are striking.
 - *?subrufescens* Peck. In mixed woods; Victoria Beach. Pileus pink, pruinose, 2-3 cm. broad; stem pinkish, slender; gills close, narrow, decurrent.
 - *virgineus* Fr. Kenora; Sept.-Oct.
 - Laccaria laccata* (Scop.) Berk. & Broome. Common and variable; along the Hudson's Bay Railway and Norway House southwards.
 - *ochropurpurea* Berk. Rather common; Univ. eastward. Similar to the preceding, but pileus larger.
 - *?tortilis* (Bolt.) Boud. Kenora. Pileus small, deformed; spores echinulate, about 10μ wide.
 - Lactarius affinis* Peck. Mixed woods; Norway House, Victoria Beach and eastern Man. Often abundant and well developed.
 - *chrysorrheus* Fr. Mixed woods; Victoria Beach. Pileus subviscid, pale yellowish, somewhat zoned; the milk changes to sulphur yellow.
 - *cilicioides* Fr. In coniferous woods; Norway House, Victoria Beach; Aug.-Sept. Often abundant; pileus large, covered with a tomentum which is particularly evident around the margins of expanding pilei; milk changing to yellow.
 - *controversus* Fr. Clear Lake, Ingolf, Univ.; Aug. Pileus large, somewhat zoned, whitish; gills pink to salmon colored; milk white.
 - *deliciosus* Fr. Common in coniferous areas; Clear Lake, Norway House, eastern Man. This species is sometimes collected and stored by squirrels.
 - *fuliginosus* Fr. Kenora; Sept. Pileus small, smoky brown; taste acrid.
 - *helvus* Fr. In bogs; Ingolf, Kenora; Aug.-Sept. Pileus tawny, rather large; milk watery.
 - *hygginus* Fr. Mixed woods; Victoria Beach; Aug. Pileus bright tan, viscid; stem concolor; gills subdecurrent.
 - *indigo* Schw. On sandy soil under *Pinus Banksiana*; near Beausejour and at Victoria Beach; Sept. This striking fungus with dark blue milk has been found in but two locations, and only a few pilei in each case; but it can be identified from a distance.
 - *insulsus* Fr. In frondose or mixed woods; along the Red River, at Norway House and Victoria Beach. Pileus copper-orange, conspicuously zoned; taste acrid; spores echinulate, $8-10 \mu$.
 - *maculatus* Peck. In sandy woods; Victoria Beach. Pileus grayish-lilac, distinctly zonate; milk, or at least the flesh, turning purplish when exposed. This striking fungus is rather common in autumn.
 - *obnubilus* Lasch. Near stumps of *Alnus incana*; Ingolf; J. E. Lange and G. R. Bisby. Pileus small, 1-2 cm. wide, brown, centre more or less umbonate. Dr. Lange considered it to agree with *L. obnubilus* as he has found and described it in Denmark.

Lactarius parvus Peck. In coniferous woods; Norway House.

- **piperatus** Fr. Common along the Red River, Lake Winnipeg, and eastward. Frequently parasitized by *Hypomyces lactifluorum* (q.v.), which makes it a conspicuous orange-red fungus frequently gathered and eaten, or dried for winter use, or sold on the North Winnipeg market, usually by people from central Europe. See Buller (82, vol. II).
- **?pubescens** Fr. Ingolf; Aug. Like *L. controversus*, but pileus smaller and stem hollow.
- **pyrogalus** Fr. Mixed woods; Minaki, Victoria Beach; Sept. Pileus dark gray; spores c. 8 μ .
- **rufus** Fr. Common in coniferous areas, in bogs or woods; Norway House to Victoria Beach eastward; Aug.-Sept.
- **subdulcis** Fr. In mixed or frondose woods; Norway House to Univ.; early July to Sept.
- **subpurpureus** Peck. On sandy soil in coniferous woods; Victoria Beach; Sept. Pileus dark red, zoned; milk reddish becoming greenish.
- **theiogalus** Fr. In a Sphagnum bog; Ingolf; Sept.; J. E. Lange and G. R. Bisby.
- **torminosus** Fr. Common in frondose or mixed woods; Clear Lake, Norway House, Univ. and eastward; July-Sept. Pileus pinkish-buff, tomentose.
- **trivialis** Fr. Seen at Ingolf, Norway House and Victoria Beach.
- **turpis** Fr. Mixed woods; Kenora; Sept. Pileus large, umber; spores 6-8 μ .
- **uvidus** Fr. Rather common; Clear Lake to Gimli and Kenora. The milk and flesh soon become lilac when cut. Recorded as poisonous to man, but found by Mr. Criddle to be stored as food by squirrels.
- **vellerius** Fr. Mixed woods; Kenora and Victoria Beach. Pileus sometimes up to 30 cm. in diameter, whitish, velvety, acrid.
- **?vietus** Fr. Minaki; Sept. Pileus viscid, drab, azonate; stem hollow.
- **?volemus** Fr. Ingolf; Aug.
- Lentinus cochleatus** Fr. On old Betula; Victoria Beach; Aug.; coll. H. J. Brodie. Pilei small, smooth, confluent-caespitose; spores 3-4 μ .
- **lepideus** Fr. Very common on railway ties and other coniferous wood in Man.
- **sulcatus** Berk. Occasional on old wood of Populus, etc.; along the Red River; June-July. Pileus small, sulcate, tan with rufous centre; spores 14-16 \times 6-7 μ .
- **umbilicatus** Peck. Usually on wood, sometimes on the ground; coniferous areas of eastern Man. Pileus 1½-3 cm., very hygrophanous, watery-brown then isabelline, umbilicate; stem short, concolor, angular or grooved; gills very serrate; spores 4-6 \times 3½-4½ μ .
- **Underwoodii** Peck. On wood; Lac du Bonnet; July; coll. A. M. Brown. Pileus large, rather woody, tan with minute brownish points; gills very decurrent, anastomosing somewhat on the stem, serrate; stem concolor or darker, striate; spores 11-14 \times 4-5 μ .
- **vulpinus** Fr. On wood of Populus, etc.; Clear Lake, Univ., Victoria Beach; Aug. Pilei imbricate, large, rough-hairy; spores c. 3 μ .
- Lepiota acutaesquamosa** Fr. Ingolf, Kenora; Aug.-Sept. Pileus beset with erect scales; spores 7-9 \times 2½-3½ μ .
- **americana** Peck. Occasional in fields, etc.; Winnipeg and vicinity. Pileus large, somewhat scaly, tinged reddish; spores 8-10 (12) \times 6 μ .
- **amianthina** (Scop.) Fr. Amongst moss in woods; Ingolf; J. E. Lange and G. R. Bisby. Considered by Dr. Lange to be this species; it agrees with the description in Rea's British Basidiomycetae.
- **clypeolaria** Fr. Common in woods, Univ., Victoria Beach eastward; July-Oct. Spores 11-16 \times 4-6 μ .
- **cristata** Fr. In deciduous and mixed woods; Univ., Victoria Beach; July-Sept. Pileus small, with reddish scales; spores wedge-shaped, 6-7 \times 3-4 μ .
- **geniculospora** Atk. Ingolf; Aug. Pileus brown, silky, darker at centre; spores 13-16 \times 4-6 μ , obliquely apiculate.
- **glioderma** Fr. In coniferous woods; Clear Lake, Victoria Beach; Aug. Pileus viscid, reddish; stem peronate; spores 4-5 μ , with a small apiculus.
- **granulosa** Fr. Common in coniferous woods; Clear Lake, Victoria Beach eastward. Pileus brick red, granulose as is the lower stem; spores c. 4-6 \times 3 μ .
- **illinita** Fr. In mixed woods, eastern Man.; Sept.; three collections. Pileus and stem glutinous; annulus obsolete; spores 5-6 \times 3-4 μ .

- Lepiota naucina* Fr. Sometimes abundant in yards and amongst grass; Manitoba and Saskatoon, Sask.; July-Sept.
- *rubrotincta* Peck. Deciduous woods; Univ. Pileus 2-3 cm., reddish-brown on disc, with appressed reddish scales elsewhere; spores $8-9 \times 4-4\frac{1}{2} \mu$, apiculate; cystidia on edge of gills.
- Marasmius androsaceus* Fr. Commonly found attached to fallen needles of Pinus; Norway House southward; apparently this species on bark of living Ulmus; Univ.
- *campanellus* (Peck) Atk. & House. On dead twigs of *Abies balsamea* and Pinus, on the tree or fallen; Berens River to Victoria Beach. As Atkinson points out (Rept. State Botanist, New York, for 1917: 61, 1919) *Collybia stipitaria* is a different species.
- *cohaerens* (Fr.) Bres. Along the Red River; July-Sept. Known by the horny dark red stems and the reddish cystidia $75-90 \times 10-12 \mu$. Bresadola calls this species *M. ceralopus* Pers.
- *epiphyllus* Fr. Common on fallen leaves of Populus, Quercus, etc.; Univ. to Victoria Beach and eastward.
- *?erythropus* Fr. In coniferous woods, sometimes on burnt places; Clear Lake and eastern Man. Pileus 1-2 cm., dark tan, disc darker, slightly pruinose, plane to depressed; gills subdistant, whitish to yellowish, decurrent; stem 5-6 cm. \times 1-2 mm., date-brown except at apex, with a slight brown pubescence; sterile cells on edge of gills; spores $10-11 \times 6 \mu$.
- *felix* Morg. On fallen leaves of *Quercus macrocarpa* along the Red River. Pileus 3-7 mm., more or less sulcate, cream-colored becoming brownish; gills few, distant, venose; stem $\frac{1}{2}$ mm. wide, brownish becoming black, white-furfuraceous; spores $8-10 \times 4-5 \mu$.
- *foetidus* Fr. On fallen coniferous twigs; Victoria Beach. Pileus small, brownish, with a small dark umbilicus; stem velvety: odor of rotten eggs.
- *?graminum* Lib. On decaying petioles or herbaceous stems: Univ. Pileus 1-2 mm. wide, brownish, sulcate, umbonate; stem brown, filiform; gills few, not attached to a collar; spores $8-10 \times 3-4 \mu$.
- *?minutus* Peck. On fallen deciduous leaves; Univ.; det. J. Dearness.
- *oreades* Fr. Rarely found amongst grass; Univ. Odor fragrant; spores $8-9 \times 4-5 \mu$. Buller (82, vol. II: 88-94) records that it has been cultivated for food in Winnipeg.
- *polyphyllus* Peck. In frondose woods; Univ. Pileus pale reddish; gills narrow, crowded, almost free; stem hollow; taste of garlic persistent; spores $5-6 \times 3-3\frac{1}{2} \mu$.
- *rotula* Fr. Common on fallen leaves, on bark, etc., along the Red River. Gills attached to a free collar; spores $8-9 \times 3-4 \mu$.
- *scorodonius* Fr. On the ground in mixed woods; Ingolf; J. E. Lange and G. R. Bisby. Strong odor of garlic when the plants are bruised.
- *semihirtipes* Peck. In deciduous woods; Univ. Pileus reddish-brown; stem dark red-brown, velvety; spores $7-8 \times 4 \mu$.
- *?spongiosus* Berk. & Curt. On sand; Victoria Beach. Pileus tan, not darker at centre, stem spongy-thickened at base.
- *urens* Fr. In woods; Kenora, Univ., Victoria Beach. Stem reddish-brown, pubescent; taste acrid.
- *varicosus* Fr. Near a bog; eastern Man.; Sept. Pileus 1-3 cm., reddish-purplish-brown; gills becoming reddish; stem hollow, dark red within; spores $5-7 \times 2\frac{1}{2}-3\frac{1}{2} \mu$; taste mild.
- *velutipes* Berk. & Curt. In woods; Norway House, Univ. Pileus 2-4 cm., reddish-brown when moist, hygrophanous; gills narrow, crowded; stem grayish-tomentose, 8-12 cm. long; spores $6-7 \times 3-4 \mu$; no cystidia; taste mild.
- Mycena Abramsii* Murrill (as a species of *Prunulus*). On old wood and debris; Victoria Beach; July-Sept. Pileus conic, dark brown; spores $8-11 \times 5-7 \mu$. Det. A. H. Smith, as were most of the species of *Mycena*.
- *acicula* Fr. Common on leaves and twigs; Univ., Victoria Beach; June-July. A beautiful little plant with red to orange pileus and yellow stem; spores $8-11 \times 3-4 \mu$.
- *alcalina* Fr. In woods; Univ.; June-Oct. Pileus grayish; odor nitrous; spores $9-10 \times 6 \mu$.
- *?atro-alboides* Peck. On decayed wood; Victoria Beach. Pileus small, blackish; stem dark; spores c. $8 \times 5 \mu$; cystidia c. $60 \times 17 \mu$.
- *atrocyanea* Fr. On debris in woods; Univ. Pileus conical, gray, about 1 cm. wide; stem bluish-gray; spores $8-9 \times 6 \mu$; sterile cells at edge of gills; odor none.

- Mycena chlorantha* Fr. or near. In deciduous woods; Univ. Pileus very small, greenish to yellowish, translucent striate, umbonate; gills white; stem 1 mm. wide, pale green above, darker green below, mycelioid at base; spores $12-14 \times 5-6 \mu$; pointed sterile cells at edges of gills.
- *citrinomarginata* Gillet. Not uncommon on leaves in deciduous woods; Univ.; June-Sept. Pileus conical, 5-18 mm. wide, yellowish or greenish, striate and plicate, innately silky; stem concolor, darker below, 4-5 cm. \times 1-3 mm., sometimes twisted, easily splitting, mycelioid at base; gills grayish with yellow edge; spores $9-13 \times 4-6 \mu$.
 - ?*clavicularis* Fr. var. *luteipes* Kauff. Kenora. A small species with a long, viscid, yellow stem.
 - *collariata* Fr. On decayed deciduous wood; near Univ.; Sept. Pileus creamy white, 5-13 mm. wide, glabrous; gills whitish, attached to a collar; stem 4-6 cm. \times $1-1\frac{1}{2}$ mm.; spores $7-9 \times 5-6 \mu$.
 - ?*corticola* Fr. A *Mycena* thought to be this species has been seen on the bark of trees; Univ.; not yet studied carefully.
 - *cyaneobasis* Peck. On debris in deciduous woods; Univ.; June-July. Pileus blue-green when young, 10-15 mm. wide; stem pruinose, with some bluish fibrils at the base; spores subspherical, 6-8 μ long.
 - *epipterygia* Fr. Amongst moss; Berens River, Ingolf; Aug.-Sept.
 - ?*excisa* Fr. In mixed woods; Kenora, Victoria Beach. Pileus 2-3 cm. wide, umber, firm; stem concolor; spores $8-10 \times 5-6 \mu$, apiculate; cystidia c. $50 \times 20 \mu$.
 - *galericulata* Fr. Fairly common on decayed wood; along the Red River and at Victoria Beach; June-Nov.
 - *haematopa* Fr. Occasional; Univ. and Victoria Beach eastward. The stem exudes a red juice when cut; spores $8-10 \times 6 \mu$.
 - *immaculata* Peck. In deciduous woods; Univ.; July. Pileus 2-6 mm. wide, glabrous, pure white, as is the stem; spores $8-10 \times 3 \mu$.
 - ?*inclinata* Fr. In deciduous woods; Univ. Pileus about 2 cm. wide, brown, with a sharply marked, persistent umbo; stem concolor, twisted, furrowed; spores c. $9 \times 6 \mu$.
 - *iodiolens* Lundell. In deciduous woods; Univ. Pileus gray, brownish on drying, small, pruinose to somewhat fibrillose; stem dark; spores $8-10\frac{1}{2} \times 6 \mu$; odor nitrous.
 - *Jacobi* Maire. On rotted deciduous wood; St. Norbert and Univ.; June. Pileus 2-3 cm. wide, innately silky, gray-brown, becoming plane; stem rooting, often from buried wood; gills white with traces of pink; spores $9-11 \times 6-7 \mu$; cystidia numerous.
 - *lactea* Fr. On old deciduous wood and bark along the Red River; June-Sept. Pileus to 10 mm. wide, pale yellowish, somewhat striate; stem 3-4 cm. \times 1 mm., concolor, mycelioid at base, spores $8-10 \times 5 \mu$; odor slightly alkaline.
 - *lactea* var. *pithya* Alb. & Schw. Amongst moss; Clear Lake.
 - *Leaiana* Berk. On old logs; Victoria Beach; July. Plants caespitose, bright orange-yellow; gills with edges red; spores $7-9 \times 4-5 \mu$.
 - *leptocephala* Fr. On the ground in woods; Univ. and Victoria Beach; June-July. Pileus conic, gray; odor nitrous; spores $9-10 \times 6 \mu$.
 - *megaspora* Kauff. In a bog; Kenora; Sept. Pileus dark brown, 2 cm. wide; stem concolor, deeply rooting in the moss; spores up to 15μ long.
 - *minutula* Peck. On moss and old wood; Univ. eastward; June-Aug. Pileus minute, white; stem slender, white, covered with microscopic cylindrical hairs; spores $7-8 \times 4-5 \mu$.
 - *niveipes* Murrill (as *Prunulus*). On the ground in deciduous woods; Univ.; June. Pileus 2-3 cm. wide, whitish becoming tan colored on drying, slightly striate; gills white; stem 6-7 cm. \times 2-3 mm., whitish, nearly glabrous, mycelioid at base; spores $8-11 \times 6-7 \mu$; odor none.
 - *pectinata* Murrill (as *Prunulus*). In woods; Univ., Victoria Beach; June. As described by Murrill except that the spores are $8-12 \times 5-7 \mu$.
 - *pelianthina* Fr. In deciduous woods; Univ.; July-Sept. Gills provided, especially on edges, with purple cystidia; spores $6-8 \times 4 \mu$.
 - *polygramma* Fr. var. *albida* Kauff. Rather common in deciduous woods; Univ.; June-Aug. Pileus 2-4 cm. wide, white, becoming gray, striate; stem white, somewhat rooting; spores $9-12 \times 5-6 \mu$; cystidia abundant, pointed; odor nitrous.
 - ?*praelonga* Peck. On old wood; Univ.; June. Pileus dark brown; stem long.

- Mycena pura** Fr. Common in mixed woods, occasional in deciduous woods; Clear Lake and Univ. eastward. Pileus with various shades of pink, lavender, and blue; cystidia present.
- **purpureofusca** Peck. Mixed woods; Victoria Beach; July. Pileus purplish-brown; stem and edge of gills concolor. Spores in dried specimens $8-9 \times 4-5 \mu$.
- **stannea** Fr. Amongst leaves and moss in deciduous and mixed woods; Univ. eastward. Pileus $1-2\frac{1}{2}$ cm. wide, hygrophanous, conical, striate to umbo, gray, darker on umbo; gills grayish, broad, subdistant, adnate; stem $3-7$ cm. $\times 1-3$ mm., concolor, darker and mycelioid at base, smooth and hollow above; spores $8-10 \times 5-6 \mu$; a few cystidia present; odor none.
- **stylobates** Fr. On decaying bark; Univ.; June. Pileus $1-3$ mm. wide, white, striate, smooth or with a few hairs; stem filiform, white, arising from a circular flat, villous base or shallow cup-like disc; spores $7-10 \times 4-5\frac{1}{2} \mu$.
- **vulgaris** Fr. Amongst pine needles, etc., in coniferous woods in eastern Man.; Sept. Pileus and stem viscid; pileus $5-10$ mm. wide, dark brown, striate; gills subdecurrent; stem $2-4$ cm. $\times 1$ mm., whitish above, darker below; spores $7-9 \times 4-5 \mu$.
- Omphalia campanella** Fr. Common on coniferous wood; Clear Lake, around Lake Winnipeg eastward. Often forms extensive clusters; stem date-brown; spores $6-8 \times 3-4 \mu$.
- **epichysium** Fr. Occasional on old wood; Kenora, Victoria Beach; June-Sept. Pileus smoky-brown, to 4 cm. wide; stem concolor; spores $6-9 \times 4-5 \mu$, pip-shaped.
- **fibula** Fr. On mosses; Victoria Beach southeastward. Spores $4-6 \times 2-2\frac{1}{2} \mu$.
- **fibuloides** Peck. On moss; eastern Man. Pileus larger than the preceding; spores $6-8 \times 4 \mu$.
- **gracilis** Quél. In Sphagnum; Ingolf; det. A. H. Smith. Pileus about 1 cm. wide, whitish becoming yellowish; stem long and slender.
- **?onisca** Fr. In deciduous woods; Univ.; Sept. Pileus $10-15$ mm. wide, hygrophanous, dark brown; spores $7-9 \times 5 \mu$, ovate with a curved apiculus at the end.
- **?olivaria** Peck. In moss in sandy woods; eastern Man. Pileus $7-20$ mm. wide, yellowish to slightly greenish, umbilicate; gills broad, subdistant; stem concolor; spores $c. 8 \times 6 \mu$.
- **pyxidata** Bull. Amongst mosses; eastern Man.; Oct. 1. Pileus reddish-brown, hygrophanous striate, infundibuliform; stem concolor; spores $6-8 \times 5 \mu$. The plants appear as illustrated in Bresadola's Iconographia, Fig. 260, but the spores (from a spore print) are somewhat shorter than he records.
- **?rugosidisca** Peck. On decayed wood; Victoria Beach. Pileus hygrophanous, dark-brown when moist, more or less rugose.
- **umbellifera** Fr. On the ground or old wood; Ingolf and Minaki. Pileus small, yellowish-brown; stem darker.
- **umbratilis** Fr. On burnt places; Clear Lake. Plants nearly black, except the gills; pileus hygrophanous; spores subglobose, mostly $5 \times 4 \mu$.
- Panus angustatus** Berk. On old wood; Victoria Beach eastward; June-Aug. Spores $3-5 \mu$; cystidia $50-55 \times 9-14 \mu$.
- **rudis** Fr. Common on Betula and other frondose wood; Univ. to Victoria Beach and eastward. Pileus tough, strigose, brown.
- **stypticus** Fr. form *luminescens* Buller. Occasional on old Betula, Populus, Quercus, etc.; across Man. and at Saskatoon, Sask. The North American form of this species is luminous; (see 82, vol. III).
- **violaceofulvus** (Batsch) Quél. On Betula; Kenora; det. A. H. Smith. Not recorded in Kauffman's "Agaricaceae of Michigan."
- Pleurotus applicatus** Fr. On old Fraxinus, etc.; Univ.; abundant on lower side of fallen logs of *Thuja occidentalis*; West Hawk Lake; det. A. H. Smith.
- **atrocaeruleus** Fr. var. *minimus* Dearness & Bisby (71: 104). On old wood; Victoria Beach. Pileus $5-10$ mm. broad; spores $7-10 \times 4-5 \mu$; cystidia $35-60 \times 10-13 \mu$.
- **atropellitis** Peck. On old wood; Victoria Beach. Spores $7-9 \times 4-5 \mu$, plants otherwise similar to *P. applicatus*.
- **circinatus** Fr. On old wood; Kenora, Univ. Pileus $2\frac{1}{2}-4\frac{1}{2}$ cm. wide, regular, tough, whitish, tan-colored on drying; gills crowded, narrow, white; stem eccentric, $2-4$ cm. long, hollow, glabrous or slightly white-silky; spores $3-4 \times 2\frac{1}{2}-3\frac{1}{2} \mu$; odor and taste none or slight.
- **craspedius** Fr. On old Populus; Univ., Victoria Beach. Pileus up to 12 cm. wide, tan to flesh-color, with a wavy edge marked by reticulations; stem eccentric; spores subspherical, $5-6 \mu$ in diameter. Agrees with Fries Icones, Pl. 86.

- Pleurotus elongatipes* Peck. On old logs of *Acer Negundo*; Univ. Stem up to 15 cm. long, hollow; spores $4-6\ \mu$.
- *fimbriatus* Fr. var. *regularis* Kauff. On old wood; Lac du Bonnet and Victoria Beach; July-Sept. Pileus hyaline-hygrophanous, then like an egg-shell in appearance; odor farinaceous; spores $4 \times 3\ \mu$; sterile cells on edge of gills.
- *lignatilis* Fr. On old wood of *Fraxinus*, etc.; Ingolf, Univ. Pileus chalky-white, tough, floccose-pruinose or innately silky; stem usually eccentric; odor farinaceous; spores $3-4 \times 2\ \mu$.
- *ostreatus* Fr. Rather common on old *Populus*, etc.; Man. and Sask. See Buller (82, vol. III).
- *petaloides* Fr. On old *Betula*, etc.; Victoria Beach eastward. Pileus spathulate; spores globular, $3-4\ \mu$; cystidia abundant.
- *?pulmonarius* Fr. On old *Populus*, etc.; Victoria Beach, Winnipeg; June-Sept. Pileus to 8 cm. wide, smooth, not areolate, dull white to pale isabelline; flesh thin, white; gills broad, fairly close, not anastomosing; stem lateral; spores $10-14 \times 4-5\ \mu$ (mostly $11-13 \times 4\ \mu$), print white; odor slight. This species agrees with Bresadola's Fig. 293. It can hardly be *P. subarcuolatus* Peck.
- *sapidus* Kalchbr. On deciduous logs along the Red River. Pileus large; spores $9-11 \times 3\frac{1}{2}-4\frac{1}{2}\ \mu$, with a lilac tint in mass.
- *?septicus* Fr. On old *Acer Negundo*, etc.; Univ.; July. Pileus small, sessile, white; spores $7-9 \times 3\frac{1}{2}-4\ \mu$.
- *serotinus* Fr. On *Betula*, etc.; Ingolf, Kenora. Pileus greenish yellow; spores $4-5 \times 1-1\frac{1}{2}\ \mu$.
- *subpalmatus* Fr. In deciduous woods; Univ.; July 31, 1928. Pileus 6 cm. wide, reddish with a gelatinous surface raised into coarse reticulations; spores echinulate, $6-8\ \mu$. Fig. 23 in Lloyd's Mycological Notes and Pl. 422B in Cooke's Illustrations represent the species well. Rea calls it *Pleurotus palmatus*.
- *ulmarius* Fr. Very common in autumn in and about Winnipeg on living or dead trees of *Acer Negundo*, *Ulmus*, etc. Can be found by looking upwards in the woods or along boulevards, for the pilei project from wounds where branches have been removed or have fallen. It is a wound parasite, but apparently does not kill the trees. See Buller (82, vol. II).
- Russula albida* Peck. In deciduous woods; Univ.; July-Aug. Whitish plants with mild taste.
- *albidula* Peck. In mixed or frondose woods; Ingolf, Univ., Victoria Beach. Similar to *R. albida*, but taste acid.
- *alutacea* Fr. In sandy mixed woods; Victoria Beach; Sept. Plants large, purplish red; gills yellow.
- *amygdaloides* Kauff. In deciduous woods; Univ.; Aug. Large plants with pink to yellow colors and yellow gills.
- *aurantialutea* Kauff. In deciduous and mixed woods; Univ. eastward. The late Dr. Kauffman identified this species among a collection stored by squirrels in an attic at Minaki.
- *borealis* Kauff. In wood; Univ., Victoria Beach eastward. Pileus brilliant red, gills yellow.
- *chamaeleontina* Fr. Along the Red River and northward; July-Aug. Pileus 2-5 cm., commonly with purple and red colors.
- *decolorans* Fr. Often very common under *Pinus Banksiana*; Ingolf, Victoria Beach. Pileus large, orange-red fading to yellowish; flesh becoming ashy.
- *delica* Fr. Univ. north and east. Pileus up to 15 cm. wide; gills alternately long and short, bluish-green at edge and especially at attachment to stem.
- *densifolia* Secr. In frondose woods; Univ.; in sandy woods; Victoria Beach. The flesh, gills, and stem turn reddish when cut, then black; spores $7-9 \times 6-8\ \mu$; sterile cells on edge of gills.
- *emetica* Fr. Recorded with some doubt in Man. Not common, perhaps because only one species of oak is present.
- *fallax* Cooke. On Sphagnum; Norway House, Victoria Beach eastward. Disc of pileus livid; taste acid.
- *flava* Romell. Common under *Pinus Banksiana* on sandy soil; Victoria Beach eastward. Pileus dull yellow; flesh ashy.
- *foetens* Fr. Mixed woods; Victoria Beach. Pileus large, dingy yellowish, soon ill-smelling.
- *fragilis* Fr. In coniferous areas; Victoria Beach eastward. Pileus small, fragile, bright rosy to pale red.

- Russula graminicolor* Quél. Norway House to Univ. and eastward. Pileus medium in size, greenish.
- *integra* Fr. Around Lake Winnipeg and eastward. Pileus dull red to buff.
 - *lutea* Fr. In frondose and mixed woods; Univ. eastward. Pileus and gills yellow.
 - *nigricans* Fr. In sandy woods; Minaki, Victoria Beach. Pileus large, becoming nearly black; flesh when cut turning reddish then blackish.
 - *?ochroleucoides* Kauff. Ingolf; July. Pileus large, yellowish; gills white.
 - *palustris* Peck. In a bog; Norway House. Pileus medium in size, purplish red; stem tinged red.
 - *roseipes* (Secc.) Bres. In frondose woods; Univ.; July. Pileus small, bright red; stem rose red.
 - *sanguinea* Fr. Univ. eastward. Pileus viscid, fragile, rosy-red, margin thin and tuberculate, taste tardily acid; spores creamy white.
 - *sordida* Fr. Victoria Beach eastward. Pileus large, sordid; flesh becoming blackish without first turning reddish.
 - *tenuiceps* Kauff. In mixed woods; Victoria Beach. Pileus large, fragile, bright red, margin striate, taste acid.
 - *?veternosa* Fr. Ingolf; Aug. Resembles *R. emetica*, but spores yellowish.
 - *virescens* Fr. Victoria Beach eastward. Pileus green with many patches on surface.
 - *xerampelina* Fr. Common; Ingolf, Univ., Victoria Beach. Dr. Lange considered the Ingolf specimens he saw to be probably *R. grarcolens*, but Kauffman is here followed for the name.
- Schizophyllum commune* Fr. Common across Man. and Sask. on dead wood, especially on stumps, trunks and large branches of *Populus* and *Betula*; sometimes on *Pyrus baccata*. The pilei withstand the desiccation and cold of winter, and were found by Buller (86) to be viable after three weeks at the temperature of liquid air (see also 82, vol. I).
- Tricholoma aurantium* (Schaeff.) Fr. Rather common in sandy mixed woods; Victoria Beach eastward. Pileus reddish, taste rather bitter; spores $c. 5 \times 4 \mu$.
- *brevipes* (Bull.) Fr. In frondose woods; Univ.; end of July to Sept. Pileus 5–7 cm., dark brown; stem fuscous, white fibrillose, short, brown within; spores $6-8 \times 4-5 \mu$, punctate; cystidia on edge of gills $40-65 \times 12-14 \mu$, roughened at apex.
 - *?chrysenteroides* Peck. Frondose woods; Univ. Pileus buff, up to 8 cm. wide; stem solid; spores $6-8 \times 4 \mu$; taste farinaceous.
 - *cinerascens* Fr. as in Kauffman, Agaricaceae of Michigan. Mixed woods; Ingolf; J. E. Lange and G. R. Bisby. Pileus 6–8 cm., convex then plane or irregularly depressed, smooth, slightly innately fibrillose, gray-alutaceous, margin paler; gills adnate or almost decurrent, narrow (4–5 mm.), very crowded, creamy white becoming gray; stem sub-bulbous, 4–7 \times 1–1½ cm., smooth; spores $3\frac{1}{2}-4\frac{1}{2} \times 2\frac{1}{2}-3 \mu$; taste farinaceous.
 - *equestre* Fr. In coniferous areas; Clear Lake, Victoria Beach eastward; Sept.-Oct. A fine species, with yellow gills and variegated yellowish pileus.
 - *fuligineum* Peck. In mixed woods; Clear Lake; Sept. Pileus smoky; spores $7-9 \times 4-5 \mu$.
 - *?fumosiluteum* Peck. In woods; Victoria Beach; Sept. Pileus smoky-yellow; spores when mature $6-7 \times 4-5 \mu$.
 - *melaleucum* Fr. Rather common on lawns; Univ.; Sept.-Oct., rarely in June. Pileus dark brown; spores $8-10 \times 6-7 \mu$, rough.
 - *nudum* Fr. In frondose or mixed woods; Univ. to Victoria Beach eastward; Sept., rarely in June. Plants small, lavender; spores $6-8 \times 4-5 \mu$, salmon-pink in mass.
 - *panaeolum* Fr. In mixed woods; Victoria Beach and eastern Man. Pileus large, usually solitary, taste peppery or bitter; whole plant pale pinkish-tan; spores $5-6 \times 3-4 \mu$, pale flesh color in mass.
 - *personatum* Fr. Common in frondose or mixed woods; Univ. north and eastward; Aug.-Oct. Plants scattered or in troops or interrupted fairy rings, tinged throughout with lavender; spores pinkish-lavender in mass.
 - *?portentosum* Fr. Mixed woods; Kenora; Sept. The plants resemble Bresadola's *Iconographia* Fig. 56, being dark and umbonate; gills yellowish.
 - *rutilans* Schaeff. Victoria Beach eastward. Pileus with reddish scales on a yellowish surface.

- Tricholoma spermaticum* Fr. var. *umbonatum* Lange in litt. Common in mixed woods; Clear Lake, Victoria Beach eastward. The pileus has a conical pointed umbo that is conspicuous when the plants are fresh or dried. Pileus pale gray with innate fibrils of the same color; spores $6-7 \times 5-5\frac{1}{2} \mu$; no odor or taste. A very distinctive fungus, studied at Ingolf by Dr. J. E. Lange and G. R. Bisby.
- *terreum* Schaeff. Common in woods; Univ. to Victoria Beach and eastward. Pileus gray, silky becoming scaly, turning dingy greenish where bruised; gills emarginate, white then pale greenish to brown; whole plant fragile; spores $5-7 \times 3-4 \mu$; odor and taste strongly farinaceous. These plants resemble Breasadola's Fig. 74, *T. scalphuratum*, more than his Fig. 75 of *T. terreum*; but Kauffman considers that these species intergrade.
- *transmutans* Peck. In frondose or mixed woods; Univ., Victoria Beach and eastward. Pileus viscid, large, reddish brown, pellicle bitter; stem solid, up to 2 or 3 cm. thick; gills becoming reddish spotted; spores $5-6 \times 3-4 \mu$, with a large oil drop; odor farinaceous. Kauffman reports it as sometimes forming mycorrhiza on roots of black oak.
- *tumidum* Fr. In mixed woods; Victoria Beach. Pileus about 8 cm. wide, "tumid," gray spotted with brown, margin paler; flesh and gills cinerascens; spores $4-5 \times 3\frac{1}{2}-4 \mu$.
- *vaccinum* Fr. Under conifers; Clear Lake, Ingolf. Pileus medium in size, reddish brown, innately scaly.
- Trogia crispa* Fr. Common on branches of Alnus and Betula, sometimes on Salix and other frondose wood; Norway House, Univ. and eastern Man.

Rhodosporeae

- Claudopus greigensis* Peck. On deciduous wood; Univ.; July-Aug. Pileus 1-2 cm. broad, gray, innately silky, hygrophanous; stem concolor, eccentric, pruinose; gills gray, narrow, subdistant, fragile, hardly reaching stem; spores $8-10 \times 6-7 \mu$, angular.
- *mephiticus* Murrill. Common on old deciduous wood or stumps, sometimes around the bases of living trees; along the Red River near Winnipeg; usually in July, sometimes later. Manitoba plants described in "Fungi of Manitoba", p. 107. Easily recognized by its penetrating mephitic odor. Spores $8-11 \times 6-7\frac{1}{2} \mu$.
- *nidulans* Fr. Common in Man. on old deciduous wood in autumn, occasionally overwintering and shedding spores the following spring. Gills orange-yellow; odor unpleasant, but mild compared with the preceding.
- Clitopilus noveboracensis* Peck. Common on leaf-mold, etc., in coniferous woods; Victoria Beach eastward; July-Sept. Pileus brownish, concentrically marked with dark rings; spores creamy-pink, c. $6 \times 4 \mu$, slightly angular.
- *?subplanus* Peck. On decayed wood; Univ., July. Pileus gray, about 3 cm. wide, depressed in centre, innately silky; gills adnato-decurrent; stem hollow; spores angular, $11-12 \times 8 \mu$.
- *subvilis* Peck. In woods; Kenora, Univ. Pileus brown, depressed or umbilicate; stem hollow; spores $8-10 \times 7-9 \mu$; odor farinaceous.
- Eccilia ?mordax* Atk. In mixed woods; eastern Man.; Oct. Pileus small, drying isabelline; stem more or less fistulose; spores $6-7 \times 4-5 \mu$.
- *?nivea* Peck. In sandy soil at the edge of mixed woods; Victoria Beach; July. Pileus thin, 9-12 mm. broad, grayish white, silky, umbilicate; spores c. $12 \times 8 \mu$, often uniguttulate, pink in mass.
- *polita* Fr. In deciduous woods; Univ.; June. Pileus 3-4 cm. wide, hygrophanous, gray-brown, umbilicate; stem cartilaginous, fragile, concolor; spores rounded-angular, $8-10 \mu$. Resembles the illustrations by Atkinson, and Bresadola, Pl. 593.
- *?roseo-albocitrina* Atk. In woods; Univ.; Aug. Pileus whitish, depressed, 2-3 cm. wide; gills pink, adnato-decurrent; spores irregularly angular, $10-12 \times 8 \mu$.
- Entoloma ?alcalinum* Murrill. Kenora; Oct. 1. Pileus lacerate-scaly, grayish brown; odor and taste strongly nitro-farinaceous; spores angular, $8-10 \times 6-8 \mu$. Type collected in Minnesota.
- *?clypeatum* Fr. In mossy woods; Kenora; Sept. Pileus brownish, streaked with darker fibrils.
- *griseum* Peck. Rather common in woods, occasional in an orchard; Univ. eastward. Pileus grayish-brown, more or less hygrophanous; spores $8-10 \times 7-8 \mu$, with prominent apiculus.

- Entoloma jubatum* Fr. In woods; Univ., Ingolf; May and Sept.; J. E. Lange and G. R. Bisby. Pileus 2-6 cm. wide, fibrillose-scaly, mouse-color; stem hollow; spores irregular, c. $10 \times 6 \mu$.
- *Peckianum* Burt. In woods; Victoria Beach; June-Sept. Pileus brownish, innately fibrillose; spores $9-10 \times 7-8 \mu$.
- *?rhodopolium* Fr. In mixed woods; Kenora. Pileus firm, gray-brown, glabrous; stem long, white; spores angular-roundish, $6-9 \mu$.
- *sericatum* Britz. In frondose woods; Univ. Pileus whitish, hygrophanous, gills white at first; spores $9-10 \times 7-8 \mu$.
- *sericeum* Fr. In open woods; Birds Hill, Univ., Victoria Beach. Pileus brownish; spores $8-10 \times 6-8 \mu$.
- *strictius* Peck. In swampy woods; Victoria Beach. Pileus strongly umbonate, cinnamon-brownish; spores $9-12 \times 7-8 \mu$, nucleate, angular.
- Leptonia asprella* Fr. In woods; Univ., Victoria Beach, and eastward. Pileus 2-4 cm. wide, grayish-brown; spores sharply angular, $9-14 \times 6-8 \mu$.
- *?formosa* Fr. In low woods; Kenora. Plants slender; spores $10-12 \times 7-8 \mu$.
- *grisea* Peck. Common in frondose woods along the Red River; July. Pileus $1\frac{1}{2}$ -2 cm. wide, gray-brown, innately silky and striatulate, somewhat hygrophanous, plane, umbilicate; spores angular, apiculate, $8-10 \mu$.
- *lampropoda* Fr. In damp mixed woods; Victoria Beach; July. Pileus small, brownish with appressed scaly marks; spores angular, $8-13 \times 6-8 \mu$.
- *seticeps* Atk. On decayed wood; Victoria Beach; June. Cystidia $50-65 \mu$ long, some on sides of gills, more on edges; gills nearly free; spores small, $6-7 \times 5-6 \mu$, rosy in mass, not angular.
- Nolanea conica* Peck. In mixed woods; eastern Man.; Sept. Pileus conical, 10-15 mm. wide, about 10 mm. high, hygrophanous, brown, silky-shining; gills nearly free, broad, white then flesh color; stem 5-7 cm. \times 1-2 mm., straight, tubular, concolor, cartilaginous, elastic, smooth; spores $7-9 \times 5-6 \mu$.
- *dysthales* (Peck) Atk. In frondose woods; Univ.; July. Pileus campanulate, 18 mm. wide, hairy; spores long, angular, $12-16 \times 8 \mu$.
- *fuscogrisella* Peck. On moss in woods; Victoria Beach; July. Pileus about 2 cm. wide, campanulate, tan color, darker on disc, slightly silky; gills nearly free, white then pink; stem slender, rather darker than pileus; spores $7-9 \times 5-6 \mu$, angular, apiculate.
- *mammosa* Fr. In woods; Univ., Victoria Beach; July-Sept. Pileus to $4\frac{1}{2}$ cm., dark brown, innately fibrillose, umbonate, odor rancid; spores rose color, $10-12 \times 8 \mu$.
- Pluteus admirabilis* Peck. On wood; Univ., Victoria Beach, eastward. Pileus small, bright yellowish, with pileocystidia on surface sphaeroid, stalked, yellow-green, $25-35 \times 20 \mu$; spores $5-7 \times 5-6 \mu$; cystidia abundant on gills.
- *calocephus* Atk. On deciduous wood and debris; Winnipeg and Victoria Beach. Pileus bright reddish-orange; spores $5-8 \times 4-6 \mu$; cystidia present.
- *cervinus* Fr. Common across Man. and to Saskatoon, Sask. on old wood. Cystidia pronged at apex. See Buller (82, vol. III).
- *cervinus* var. *albus* Peck. The white variety has been collected at Victoria Beach; Aug.
- *epehbius* Fr., or near. In frondose woods; Univ.; July. Pileus gray, silky-shining; spores $6-7 \times 3-4 \mu$, smooth; cystidia present.
- *granularis* Peck. On old wood; Victoria Beach. Pileus 2-4 cm., yellow-brown to chestnut, granulose; spores $5-6 \times 4-5 \mu$, smooth, nucleate; cystidia numerous. This is probably var. *intermedius* Kauff.
- *granularis* var. *umbrosellus* Atk. On decayed wood; Univ., Victoria Beach. Pileus villous; cystidia yellow, giving color to the edges of the gills.
- *leoninus* Fr. On decayed wood; Norway House to Univ. and eastward. Pileus 2-6 cm. wide, bright honey-yellow to brownish, with yellow surface cells $250-300 \mu$ long, fusiform; spores $6-7 \times 5 \mu$; cystidia on sides and edge of gills.
- *longistriatus* Peck. On decayed wood, sawdust, etc.; Univ., Victoria Beach; usually in June or July. Pileus ashy-brown, long striate; stem striate, pulverulent; spores $6-8 \times 5-6 \mu$.

- Pluteus nanus* Fr. Occasional on old wood; Univ.; June-Sept. Pileus umber in centre, paler near edge; stem solid, pellucid white; spores globose, $4\frac{1}{2}$ -6 μ .
- *nanus* var. *lutescens* Fr. The variety with yellow stem is rare; Univ.
- *roseocandidus* Atk. On the ground in low woods; Univ. Pileus white, striate on margin; spores subglobose, 6-8 \times 6-7 μ ; cystidia very few.
- *salicinus* Fr. On old wood; Univ.; July-Sept. Pileus dark brown, broadly umbonate; stem slightly blue-green at base, becoming greener as it begins to dry; cystidia pronged at apex, up to 85 μ long; spores 7-9 \times 5-6 μ .
- *sterilomarginatus* Peck. On wood; Victoria Beach; July. Pileus whitish, about 15 mm. wide, with a close tomentum; gills barely reaching margin of pileus, slightly eroded at edges; spores globose, about 6 μ , often guttulate.
- *tomentosulus* Peck. On damp wood; Univ., Victoria Beach; June-Aug. Pileus whitish, tomentose; spores 6-7 \times $4\frac{1}{2}$ -6 μ ; cystidia bottle-shaped.
- *umbrosus* Fr. On piles of sawdust and chips; Kenora, Minaki; Sept.-Oct. Pileus large, umber; gills brown on edges.
- Volvaria gloiocephala* Fr. In an alfalfa field; Univ.; June. Pileus viscid, large, margin striate; spores 12-16 \times 7-8 μ ; no cystidia found; volva thin.
- *pubescentipes* Peck. In mixed woods; Ingolf; Aug. Pileus white; small; stem densely pubescent.
- *pusilla* Fr. Not uncommon on the ground in damp woods; Univ., Victoria Beach; July-Sept. Pileus 1-3 cm. wide, white becoming slightly rosy, darker on umbo, innately silky, not viscid; gills free, crowded; stem solid, white, glabrous; volva white to brownish, lobed; spores 6-8 \times $3\frac{1}{2}$ -4 $\frac{1}{2}$ μ ; cystidia 50-70 \times 12-20 μ .
- *speciosa* Fr. Occasional on rich soil; Univ. northward; June-Oct.
- *striatula* Peck. Infrequent on lawns; Univ.; July-Sept. Pileus white, 3-6 cm. wide; stem rather long; spores 6-8 \times 5-6 μ .

Ochrosporae

- Bolbitius fragilis* Fr. Rare in low woods; Univ.; June-July. Stem glabrous, yellow; spores c. 12 \times 6 μ . See Buller (82, vol. III, and 87).
- *tener* Berk. Infrequent on lawns in wet weather in summer; Univ., Winnipeg. The gills dissolve; stem long, flaccid; spores 12-16 \times 8-10 μ .
- *vitellinus* Fr. On dung and debris in woods; Univ.; June-July. Stem white, scurfy; spores 11-13 \times 6-7 μ .
- Cortinarius acutus* Fr. In woods; Victoria Beach; Sept. Pileus small, whitish, striate, with a pointed umbo.
- *alboviolaceus* Fr. Rather common in mixed woods, occasional in frondose woods; Univ., Victoria Beach, eastward. Whole plant pale violet; stem thickened at base, peronate.
- *annulatus* Peck. In woods; Univ. eastward; July-Sept. Pileus brown, minutely scaly; odor of radish; spores subglobose, rough, about 7 μ .
- *anomalus* Fr. In mixed woods; Victoria Beach, eastern Man. Pileus rather small, yellow-brown; stem, gills and flesh bluish-lavender; spores rough, 7-10 \times 6-7 μ .
- *?argentatus* Fr. Victoria Beach; Sept.; possibly *C. lilacinus*.
- *armillatus* Fr. Common, perhaps associated with *Betula*; Victoria Beach, eastern Man. A fine species, marked by the cinnabar-red bands on the stem.
- *Atkinsonianus* Kauff. In mixed woods; Victoria Beach; Sept. A striking species, with waxy yellow pileus, and violet stem, flesh and gills; spores almond shaped, slightly rough, 12-18 \times 6-8 μ .
- *?badius* Peck. In mossy woods; Clear Lake; Sept. Pileus small, brown, hygrophanous; stem distinctly mottled by the whitish veil; spores 8-11 \times 5-6 μ .
- *?brunneofulvus* Fr. In woods; Minaki, Univ. Pileus dark brown; stem with a whitish band near centre; spores 8-10 \times 6 μ , rough.
- *cinnabarinus* Fr. In woods; Victoria Beach; Aug. Pileus cinnabar-red; spores 5-5 $\frac{1}{2}$ \times 7-8 $\frac{1}{2}$ μ , slightly rough.
- *cinnamomeus* Fr. In a Sphagnum bog; Ingolf, Kenora; Sept.-Oct. Pileus small, cinnamon color; gills and stem yellow.

- Cortinarius cinnamomeus* var. *croceus* (Schaeff.) Fr. In a bog; Ingolf; J. E. Lange and G. R. Bisby; Sept.
- *?claricolor* Fr. In deciduous woods; Univ. Pileus large, orange-buff, gills erose-serrate on edges; spores $9-11 \times 6 \mu$.
- *coloratus* Peck. In woods; Univ., Victoria Beach. Pileus cream color to reddish-tan; spores $9-12 \times 5-7 \mu$.
- *communis* Peck. In frondose or mixed woods; Ingolf, Univ.; Aug.-Sept. Pileus whitish, rather small; spores $9-11 \times 4-5 \mu$.
- *?croceocolor* Kauff. In woods; Univ. Stem peronate by a saffron veil; spores $8-8\frac{1}{2} \times 6-7 \mu$, rough.
- *croceoconus* Fr. In Sphagnum; Ingolf; J. E. Lange & G. R. Bisby. Pileus small, conico-campanulate with a persistent umbo; stem long, fibrillose; spores $8-9 \times 4-5 \mu$.
- *cylindripes* Kauff. Amongst Sphagnum; Ingolf. Pileus viscid, yellowish brown; stem viscid, bluish; spores $13-15 \mu$ long.
- *decoloratus* Fr. In frondose woods; Univ. Pileus 4-7 cm. wide, viscid, yellow-brown; gills caesious then cinnamon; spores subglobose, $7-9 \times 6-7 \mu$.
- *?distant* Peck. In open deciduous woods; Univ.; July-Sept. Pileus brown; gills broad, distant; spores $8-10 \times 6 \mu$, rough.
- *elegantior* Fr. In mixed woods; eastern Man.; Sept. Pileus very viscid, yellow to ferrugineous; gills yellow at first, edges eroded; stem 4-7 \times 1-2 cm., yellow with rusty fibrils, with marginate bulb; spores $13-15 \times 8 \mu$, rough.
- *?erugatus* Fr. In woods; Univ., Victoria Beach; Sept.
- *?fuscoviolaceus* Peck. In woods; Minaki; Sept. Pileus small, 1-2 cm. wide, brownish-violet, stem concolor; spores $8-10 \times 4-5 \mu$.
- *?glandicolor* Fr. In Sphagnum; Ingolf; J. E. Lange and G. R. Bisby. Plant small, dark brown; spores $8-9 \times 5-6 \mu$.
- *hemitrichus* Fr. In woods; Minaki. Pileus small, umbonate, cinnamon-color with white fibrils; spores $6-8 \times 4-5 \mu$.
- *herpeticus* Fr. In damp woods; Univ., Victoria Beach; July-Aug. Pileus 4-5 cm. wide, viscid, pellicle separable, olive becoming brownish-spotted; gills olive-purplish at first; stem 4-5 \times 1 cm., bluish-purple, fibrillose; bulb marginate-depressed, with greenish fibres; spores $8-10 \times 5-6 \mu$, slightly rough.
- *impolitus* Kauff. In sandy coniferous woods; Victoria Beach. Pileus 1-2 cm., conic, umbonate, dark brown; stem with a whitish ring; spores $8-9 \times 4 \mu$.
- *?infractus* (Pers.) Bres. In woods; Victoria Beach. Taste bitter; spores c. $8 \times 6 \mu$, punctate.
- *lilacinus* Peck. In low frondose or mixed woods; Univ. eastward. Whole plant lilac, the color persisting on drying; stem bulbous; spores $8-10 \times 5-6 \mu$.
- *lignarius* Peck. On decayed wood; Victoria Beach; Sept. Pileus 1-3 cm. wide, cinnamon-brown, umbonate; stem with a white zone; spores $6-7\frac{1}{2} \times 4-5 \mu$.
- *?Morrisii* Peck. Under conifers; Kenora. Pileus 7 cm. wide, hygrophanous, reddish-brown, innately fibrillose, somewhat concentrically zonate at margin; stem hollow, brown, yellow within.
- *mucifluus* Fr. Common in autumn, rare in spring, in coniferous areas; Victoria Beach eastward; rarely in frondose woods; Univ. Stem with scaly bands of dried gluten; spores rough, $11-13 \times 6-7 \mu$.
- *?multiformis* Fr. In woods; Victoria Beach. Pileus large, orange-brown, viscid; spores $8-10 \times 5 \mu$.
- *olivaceus* Peck. Amongst moss; Minaki. Pileus viscid, olive-gray-brown, $3\frac{1}{2}$ cm. wide; stem white and purple, bulbous at base; spores $10-12 \times 6-7 \mu$, rough.
- *pholideus* Fr. In damp coniferous woods; Kenora, Victoria Beach. Pileus and stem scaly, brown, apex of stem violet; spores $6-8 \times 5-6 \mu$.
- *plumiger* Fr. In deep coniferous woods; Victoria Beach. Pileus pinkish-cinnamon, large, fibrillose hairy; stem clavate bulbous, pale grayish-lilac; spores $7-10 \times 5-6 \mu$.
- *pluvius* Fr. In Sphagnum; Ingolf; J. E. Lange and G. R. Bisby. The fungus fits Ricken's description. Pileus small, bitter; spores $7-8 \times 5 \mu$.

- Cortinarius purpurascens* Fr. On the ground in mixed woods; Ingolf; J. E. Lange and G. R. Bisby. Pileus viscid, purple then brown; stem bulbous; spores $9-10 \times 5-6 \mu$, rough.
- *purpureophyllus* Kauff. In mixed woods; Victoria Beach eastward. Pileus 3-7 cm., reddish-tan, darker on disc, viscid, violet then brown; stem whitish, silky, with a marginate bulb; spores $11-13 \times 7-9 \mu$, rough.
- ?*raphanoides* Fr., or near. In coniferous woods; Victoria Beach. Plants small, yellow-greenish everywhere, densely innately silky; odor and taste none; spores $7-8 \times 5-6 \mu$.
- ?*rubricosus* Fr. In woods; Minaki. Pileus dark reddish-brown; stem rusty-brown; spores $8-10 \times 5-7 \mu$, rough.
- ?*rubrocinerus* Peck. In sandy woods; Victoria Beach. Pileus reddish-brown; stem silky, with an oval bulb; spores $9-12 \times 6-8 \mu$.
- *sanguineus* Fr. Not common; Victoria Beach. Plants red throughout; taste somewhat of radish; spores $6-8 \times 4-5 \mu$, slightly rough.
- *semisanguineus* Fr. Common in coniferous woods; Clear Lake, Victoria Beach, eastern Man.; Aug.-Sept. Gills blood-red.
- *sphaerosporus* Peck. In mixed woods; Kenora, Victoria Beach. Pileus and stem with a straw-yellow, viscid pellicle; spores $6-8 \times 6-6\frac{1}{2} \mu$, rough.
- *subpulchrifolius* Kauff. In woods; Berens River, Univ. Pileus 4-10 cm., tan-gray streaked with brown; gills purple, broad, subdistant; stem concolor, peronate, sub-annulate; spores $9-12 \times 6 \mu$, rough.
- *subpurpurascens* Fr. In mixed woods; eastern Man. Pileus 5-7 cm., viscid, blue-violet then chestnut-brown, margin incurved; flesh thick, yellowish; gills blue-purple then brown, broad, close, rounded at stem; stem $4-6 \times 1\frac{1}{2}-2$ cm., purplish outside and inside, with an emarginate bulb; spores $8-9\frac{1}{2} \times 5-6 \mu$, slightly rough.
- *uraceus* Fr. Common in woods; Clear Lake, Univ. and eastern Man. Pileus rather small, very dark brown.
- *vellicopia* Kauff. In mixed woods; Victoria Beach. Pileus and stem blue-greenish-violet at first, then yellowish-tan; cortina copious; bulb marginate; spores $10-12 \times 5-6 \mu$, tuberculate, apiculate, somewhat fusiform.
- *violaceus* Fr. Rare in coniferous woods; Ingolf, Kenora, Norway House, Victoria Beach. A beautiful plant, with a metallic deep violet color. A specimen or two can usually be found in August or September: for example, a week spent in the woods at Norway House in 1931 resulted in finding four specimens: three near each other, one solitary in another location.
- Crepidotus applanatus* Fr. On wood; Ingolf. Pileus whitish, glabrous, sessile; spores spherical, $4-6 \mu$.
- *calolepis* Fr. On old Populus, etc.; Univ. Pileus sessile, brown-tomentose; spores $5-6 \times 4-4\frac{1}{2} \mu$.
- *cinnabarinus* Peck. Not rare on old logs of Populus; Matlock and Univ.; after rains in July or early August. Pileus 6-15 mm. wide, scarlet, margin incurved; gills sinuate, edges red; spores brown, $7-8 \times 5-5\frac{1}{2} \mu$. This attractive fungus has been reported also from the central-eastern U.S.A.
- *dorsalis* Peck. On old logs; Univ., Victoria Beach; July. Pileus yellowish with tawny fibrillose scales; gills bright yellow, approaching orange-yellow at first; spores spherical, about 6μ , nucleate.
- *fulvotomentosus* Peck. On old Populus, etc.; Univ., Victoria Beach. Pileus hygrophanous, tawny tomentose-scaly; gills fimbriate on edge; spores $8-10 \times 6 \mu$.
- *haerens* Peck. On old Populus; Univ.; June-Oct. Pileus viscid, hygrophanous; spores $7-10 \times 5-6 \mu$.
- *herbarum* Peck. On old Populus, etc.; Swan River (det. C. H. Kauffman), Univ. Pileus small; spores $6-8 \times 4 \mu$.
- *malachius* Berk. & Curt. On old wood; Victoria Beach; July-Aug. Pileus whitish, sessile; gills broad; spores spherical, c. 6μ in diam.
- *mollis* Fr. On deciduous wood; Univ. Pileus sessile, glabrous, tan; spores $6-8 \times 4-5 \mu$.
- ?*nidulans* (Pers.) Qué. On old boards of Pinus in woods; Univ. Pileus $2\frac{1}{2}-5$ cm. long \times 2-4 cm. wide, yellowish, soft, innately silky, margin inrolled; gills orange-yellow; spores in spore print $4-5 \times 3 \mu$.

- Crepidotus putrigenus* Berk. & Curt. On decaying wood; Victoria Beach. Pileus rather large, villose, whitish; gills broad; spores spherical, $5-7\ \mu$.
- *sepiarius* Peck. Rather common on old Populus, etc.; rarely on coniferous wood; Univ. to Victoria Beach and eastward. Pileus stipitate; stem central when growing on top of a log, otherwise eccentric or lateral; pileus minutely scaly, 5–12 mm. broad; gills fimbriate on edges; spores $9-10 \times 6\ \mu$.
- *versutus* Peck. On wood; Univ. Probably common.
- Flammula alnicola* Fr. Caespitose on old stump of Populus; Ingolf; J. E. Lange and G. R. Bisby. Pileus yellow; stem concolor, somewhat rooting; spores $8-10 \times 4\ \mu$.
- *flavida* Fr. On wood; Minaki, Univ. Pileus yellowish, with a whitish cortina below; spores $8-10 \times 4-6\ \mu$; cystidia few, clavate.
- *gummosa* Fr. On wood and sawdust; Univ. Pileus viscid, tan-colored; spores $6-7 \times 4\ \mu$; cystidia on sides and edges of gills, c. $50 \times 14\ \mu$.
- *?lenta* Fr. In coniferous woods; Victoria Beach. Pileus 3–6 cm. wide, brown on disc, pale at margin; spores $6-8 \times 4\ \mu$.
- *penetrans* Fr. In coniferous woods; Ingolf; J. E. Lange and G. R. Bisby. Pileus dark rusty brown; gills with rusty penetrating spots.
- *polychroa* Berk. On decayed wood; Birds Hill and eastern Man. Pileus viscid, 3–6 cm. wide, orange to yellow, olive-green on margin; gills with purplish-olive tinge; spores $6-8 \times 4-5\ \mu$.
- *sapinea* Fr. Common on coniferous wood, sometimes on wood of deciduous trees, Clear Lake, Univ., Victoria Beach and eastward. Pileus dry, tawny; spores $6-8 \times 4-5\ \mu$.
- *spumosa* Fr. Rather common in coniferous areas, and on sawdust at Univ. Pileus sulphur-yellow; cystidia present; spores $6-8 \times 4-5\ \mu$.
- Galera bulbifera* Kauff. On horse dung; Univ. and Victoria Beach; not uncommon on dung cultures in the laboratory. Stem bulbous at base; spores $12-15\ \mu$ long. Illustrated by Buller (82, vol. V: 366).
- *capillaripes* Peck. In grassy woods, rarely on lawns; Univ. and eastern Man. Stem filiform, flexuous; capitate sterile cells on edge of gills; spores $9-12 \times 5-7\ \mu$.
- *cyanopes* Kauff. In mossy mixed woods; Victoria Beach; July. Pileus 8–12 mm. wide, atomate, striatulate, hygrophanous; gills minutely white flocculose on edges; stem 5–7 cm. $\times 1-1\frac{1}{2}$ mm., greenish-blue, especially below; spores $8-10 \times 4-6\ \mu$; sterile cells on edges of gills $20-30 \times 8-10\ \mu$, not capitate.
- *dakotensis* Brenckle. Amongst grass on sandy soil; Birds Hill; late Sept.; det. A. H. Smith. Spores $14-18 \times 9-10\ \mu$; sterile cells not capitate. Issued by Brenckle, Fungi Dakotensis, 583, but not formally described by him.
- *Hypnorum* Fr. Common on moss in coniferous areas; Clear Lake, Victoria Beach eastward. Spores mostly $8-10 \times 5-6\ \mu$, as Kauffman reports; according to Rea $11-15 \times 6-8\ \mu$.
- *Hypnorum* var. *Sphagnorum* (Pers.) Fr. In a bog; Ingolf; J. E. Lange and G. R. Bisby. Pileus larger than preceding; stem very long.
- *?inculta* Peck. On sawdust in an empty ice house; Univ. Pileus hygrophanous, cinnamon; stem concolor, hollow, slightly pruinose at apex; gills white on edges; sterile cells capitate; spores $13-18$ (rarely longer) $\times 8-10\ \mu$.
- *pubescens* Gill. On cow dung and on the ground in pastured woods; Univ. Pileus smooth; stem slightly pubescent; sterile cells capitate; spores $9-13 \times 5-7\ \mu$.
- *ravida* Fr. On sawdust; Univ.; J. E. Lange and G. R. Bisby. Pileus ochraceous when dry; spores $8-10 \times 4-5\ \mu$.
- *tenera* Fr. Common amongst grass in Man. Spores $12-16$ (20) $\times 6-9\ \mu$.
- *teneroides* Peck. On debris, etc.; Univ. eastward. Pileus soft, hygrophanous; sterile cells capitate; spores $7\frac{1}{2}-10 \times 4-6\ \mu$.
- Hebeloma albidulum* Peck. In woods; Univ. eastward. Pileus pale tan; stem more or less bulbous at base; spores $9-12 \times 5-6\ \mu$; cystidia cylindrical c. $70 \times 6\ \mu$.
- *Colvini* Peck. Rather common; Victoria Beach. The plants grow in the fine white sand along the beach, amongst the few herbs or shrubs present. "The mycelium binds the sand into a globose mass which adheres to the base of the stem."
- *crustuliniforme* Fr. In open deciduous woods; Univ. Pileus tan, odor strong of radish; gills with beads on edges; spores $10-12\frac{1}{2} \times 5-7\ \mu$, apiculate.

- Hebeloma gregarium* Peck. In grass or under shrubs; Univ.; Oct. Pileus $1\frac{1}{2}$ - $2\frac{1}{2}$ cm. wide, even, smooth, tan, darker on the broad umbo; gills emarginate, edge white; stem 4-6 cm. \times 3-5 mm., hollow, brownish, mealy above, with a cortina at first; odor of radish when crushed; cystidia none; spores $9-11 \times 5-6 \mu$.
- *?hiemale* Bres. On the ground in woods; Univ. The plants look like Bresadola's illustrations; odor none; taste slightly bitter; spores $11-13 \times 6-7 \mu$.
- *?longicaudatum* Fr. In Sphagnum bogs; Ingolf, Norway House.
- *mesophaeum* Fr. In sandy woods; eastern Man. Pileus $1-3\frac{1}{2}$ cm. wide, conic-campanulate when young, tan with darker silky fibrils; gills whitish on edges; stem solid except for a small tubule, somewhat cortinate; spores $8-10 \times 5-6 \mu$. *H. pascuense* may be included here; some of the specimens were collected in June.
- *?simile* Kauff. In mixed woods; Clear Lake. Spores $10-12 \times 6-7 \mu$; sterile cells on edges of gills clavate, apex thickened.
- *sinapizans* Fr. In woods; Victoria Beach. Stem stout, scaly; spores with hyaline apiculus at each end; odor of mustard or radish.
- *velatum* Peck. In woods; Univ. eastward; Sept. Pileus alutaceous, somewhat viscid; stem hollow, white at first, with remains of cortina; spores $9-11 \times 5-6 \mu$; cylindrical sterile cells on edges of gills.
- Inocybe asterospora* Quél. In mixed woods; Victoria Beach; July-Aug. Pileus about 3 cm. wide; stem with emarginate bulb; spores $9-11 \times 6-8 \mu$, with large projections; cystidia abundant, c. $50 \times 18 \mu$.
- *?atripes* Atk. In mixed woods; Victoria Beach; July. Pileus small, fibrillose scaly; stem dark; spores $10-12 \times 4-5 \mu$, smooth.
- *?brunnescens* Earle. In sandy woods; Victoria Beach. Pileus $3\frac{1}{2}$ - $5\frac{1}{2}$ cm. wide, livid cinnamon-brown, darker at margin and where bruised, covered with a matted innate tomentum, plane with a slight umbo; gills adnate, close, edge paler; stem 2-3 cm. \times 4-7 mm., yellow-brown; spores subreniform, $7-10 \times 4-5 \mu$, cystidia none, but tufts of sterile cells and also long hair-like cells on edges of gills.
- *caesariata* Fr. In damp woods; Univ., Victoria Beach. Spores $8-10 \times 4-6 \mu$; cystidia none; sterile cells on edges of gills.
- *Cookei* Bres. In deciduous woods; Univ. Stem with a bulb; spores $8-10 \times 4-6 \mu$; sterile cells on edges of gills.
- *corydalina* Quél. In deciduous woods; Univ. Pileus to 7 cm. wide, olive-green on disc, odor strong; stem bulbous at base, solid, with greenish tint when cut; spores $8-9 \times 5-6 \mu$; cystidia on gills.
- *?eutheloides* Peck. In frondose woods; Univ. Spores $9-10 \times 5 \mu$; cystidia $50-70 \times 14-18 \mu$, crystallate at apex.
- *fastigiata* Bres. Exceedingly abundant in damp weather in July and Aug. in frondose woods across southern Man. Pileus very conical, yellow; spores $9-12 \times 5-6 \mu$.
- *?fastigiella* Atk. In frondose woods; Univ.
- *flocculosa* Berk. In woods along the Red River, to Victoria Beach, and eastward.
- *geophylla* Fr. Common in frondose or mixed woods; Univ. to Victoria Beach and eastward. Pileus white.
- *geophylla* var. *lateritia* (Weinm.) Stev. On the ground in low woods; Ingolf; J. E. Lange and G. R. Bisby. The pileus is reddish.
- *glaber* Kauff. In mossy sandy woods; Victoria Beach. Pileus spotted when moist, silky, yellow-brown; stem short, silky; gills white-fimbriate on edges; spores $8-10 \times 4-5 \mu$; sterile cells on edges of gills.
- *?Godeyi* Gill. In woods; Victoria Beach. Pileus turning reddish; spores $9-10 \times 5-6 \mu$; cystidia thick-walled.
- *griseoscabrosa* (Peck) Earle. In sandy coniferous woods east of Beausejour. Pileus 4-10 mm. wide, innately silky to appressed scaly, chestnut-brown, umbonate; stem $10-20 \times 1$ mm., yellowish-brown, silky; gills clay-color, emarginate; spores $9-12 \times 5-6 \mu$; cystidia with apex crystallate.
- *jurana* (Pat.) Sacc. Along grassy paths in frondose woods; Univ. Pileus large, wine-color, with a semi-fragrant mealy odor; spores $10-13 \times 6-7 \mu$; sterile cells clavate.
- *lacera* Fr. In woods; Kenora. $10-15 \times 4-6 \mu$.

- Inocybe ?lanuginosa* (Bull.) Sacc. On decayed wood; Pinawa. Gills rufescent; spores c. $10 \times 7 \mu$, covered with blunt projections.
- *leptocystis* Atk. In mixed woods; Pinawa. Pileus $2\frac{1}{2}$ – $3\frac{1}{2}$ cm. wide, floccose-scaly, umbonate, tan-brown; stem yellowish, solid; spores 8 – 10×4 – 5μ , inequilateral; cystidia c. $60 \times 13 \mu$, thin-walled.
- *leptophylla* Atk. Rather common in mixed woods; Victoria Beach. Pileus squarrose-scaly; spores with large nodules; cystidia none.
- *lilacina* (Boud.) Kauff. Not uncommon in frondose or mixed woods; Univ. Pileus small, lilac-purple.
- *minima* Peck. In woods; Norway House; det. C. H. Kauffman; Univ., Victoria Beach. Pileus 9–16 mm. wide, conic then umbonate; spores 7 – 10×4 – 5μ .
- *pallidipes* Ell. & Ev. In frondose woods; Univ., Victoria Beach. Stem whitish; spores 7 – $9 \times 5 \mu$; cystidia abundant, thick-walled.
- *pyriodora* (Pers.) Bres. In frondose woods; Univ. Flesh of pileus and stem turning red when cut; odor spicy; spores 9 – $10 \times 6 \mu$.
- *rimosa* (Bull.) Pat. In sandy woods of *Pinus Banksiana*; east of Beausejour. Pileus clay-color, fibrillose-rimose, subscaly on disc, somewhat umbonate, $1\frac{1}{2}$ – 3 cm. wide; gills almost free, but with decurrent lines on stem, broad, distant, whitish; stem concolor, silky, pruinose above; spores 9 – 11×5 – 6μ ; cystidia on sides and edges of gills.
- *rimosoides* Peck. In open frondose or coniferous woods; Univ. and eastern Man. Pileus with a prominent, sometimes subacute, umbo; spores 7 – 10×4 – 5μ ; cystidia none.
- *rufidula* Kauff. In low woods; Ingolf, Univ., Victoria Beach. Pileus small; spores 9 – 11×5 – 6μ ; cystidia abundant, apex often crystallate.
- *sondonia* Fr. In frondose woods; Univ. Odor strong; spores 9 – $10 \times 6 \mu$, cystidia 15 – 20μ broad.
- *subdecurrens* Ell. & Ev. In sandy mixed woods; eastern Man. Plants gregarious to sub-caespitose; gills decurrent by a line; stem hollow; spores 9 – 11×5 – 6μ ; cystidia none.
- *substricta* Kauff. Common in frondose or mixed woods; Univ. to Victoria Beach and eastward. Pileus 1–3 cm. wide, umbonate; gills white at first; stem rufous; spores 8 – 10×5 – 6μ ; cystidia on sides and edges of gills.
- *subochracea* (Peck) Earle. In sandy mixed woods; east of Beausejour. Pileus conic then umbonate, 2–3 cm. wide, with agglutinated fibrils; stem solid, sub-bulbous; spores 7 – 9×4 – 5μ ; cystidia on sides of gills up to $70 \times 15 \mu$, stouter on edges of gills, thick-walled, with yellow contents.
- *?umbrina* Bres. In open sandy woods; Victoria Beach. Pileus gray-tan, silky-fibrillose to subscaly, umbonate, 2–3 cm. wide; stem concolor, 30 – 40×4 mm., bulbous at base; spores very angular-tuberculate, 7 – 9×5 – 6μ ; cystidia on sides and edges of gills, c. $65 \times 16 \mu$, wall 1μ thick, apex crystallate.
- *violaceifolia* Peck. In woods; Indian Bay, Univ. Pileus 10–15 mm. wide, subconic, silky; stem and young gills violet, spores 9 – 10×4 – 5μ ; cystidia c. $45 \times 14 \mu$.
- *virgata* Atk. In frondose or mixed woods; Univ. eastward. Pileus 2–3 cm. wide, chestnut-brown on umbo, paler tan elsewhere, becoming sub-rimose; gills close, seceding; stem 30 – 40×3 – 5 mm., tan with a white scurf; spores 7 – 10×5 – 6μ ; cystidia thick-walled, often crystallate at apex.
- Naucoria bellula* Peck. On old coniferous wood; Victoria Beach. Pileus 1–2 cm. wide, rusty-brown; spores 5 – 6×3 – 4μ .
- *centuncula* Fr. Common on old deciduous wood; Ingolf, Univ., Victoria Beach. Pileus 1– $2\frac{1}{2}$ cm. wide, hygrophanous, the color of ripe olives and striate when moist, appearing silky under a lens; spores subreniform, 6 – $8 \times 4 \mu$.
- *lignicola* Peck. On decayed *Populus* and other wood, including coniferous wood and sawdust; Univ. to Victoria Beach and eastward. Pileus small, umbonate, hygrophanous, somewhat striate when moist; spores 7 – $8 \times 5 \mu$.
- *Myosotis* Fr. In Sphagnum bogs; Ingolf (coll. and det. J. E. Lange), Minaki, Whitemouth. A fine species, with olivaceous cap and very long stem; spores 16 – 20×8 – 9μ . Murrill (N. A. Flora, 3: 185) found no North American specimens and Kauffman does not include it in the Agaricaceae of Michigan. It is common in "muskegs," but was undetermined until Dr. Lange saw it.

- Naucoria pediades* Fr. Amongst grass; Univ., June-July. Pileus dry; spores $11-14 \times 7-8 \mu$; cystidia on edges of gills.
- "*semiflexa*" of Cook's Illustrations, Pl. 509A? Common on old deciduous wood; Univ. Pileus chocolate-blackish and glutinous when fresh, fading on drying, 1-2 cm. wide; stem 2-3 cm. long, c. 4 mm. wide at base, 2 mm. at apex, gray-brown, granular-scurfy; gills whitish then brown, seceding; spores $7-9 \times 4-5 \mu$, smooth, brown; sterile cells on edges of gills c. $40 \times 10 \mu$. This is not *N. semiflexa* Berk. & Broome of the descriptions, but the plants are so like Cook's illustrations that they were recognized at a glance.
- *semi-orbicularis* Fr. In lawns; Morden, Univ. Pileus viscid; spores $12-16 \times 7-10 \mu$.
- *?siparia* Fr. Amongst moss; Kenora. Pileus campanulate, slightly scaly, 1 cm. wide; stem brownish, rather cartilaginous; spores $9-11 \times 5-6 \mu$; sterile cells on edge of gills sometimes hair-like.
- *tabacina* Fr. In grass; Victoria Beach. Pileus 7-25 mm. wide, very hygrophanous, dark tobacco-brown when moist, fading to isabelline; gills white at edges; stem brown, with whitish fibrils, tapering downward; spores $6-7 \times 4 \mu$.
- *?vernalis* (Peck) Sacc. On old wood and debris; Univ., Victoria Beach; May-June. Pileus 1-3 cm. wide, hygrophanous; stem cartilaginous, hollow, scurfy, 2-4 mm. wide; spores $6-9 \times 4-5 \mu$; sterile cells on edges of gills capitate.
- *vervacti* (Fr.) Quél. In a grassy sandy field; Victoria Beach. Pileus becoming plane, yellowish-brown; spores $13-16 \times 8-9 \mu$; sterile cells on edges of gills more or less capitate.
- Paxillus involutus* Fr. Rather common in woods; Univ. eastward. It is sometimes abundant in the frondose woods along the Red River. $7-10 \times 5-6 \mu$.
- *panuoides* Fr. Rarely seen on coniferous wood or sawdust; Gimli, Ingolf.
- Pholiota adiposa* Fr. Occasional on old wood; Ingolf, Minaki, Victoria Beach.
- *albocrenulata* Peck. One specimen from a wound at the base of a living *Acer Negundo*; Winnipeg. Pileus large, viscid, tawny-reddish, appressed scaly; spores fusoid, $10-14 \times 5-6 \mu$; cystidia not seen.
- *anomala* Peck. On very decayed wood or amongst leaves; Indian Bay, Univ., Victoria Beach. Pileus hygrophanous, chestnut-brown fading to yellowish; spores $6-9 (10) \times 4-5 \mu$; sterile cells on edge of gills. Three collections examined by L. O. Overholts; one noted as intermediate with *P. confragosa*. He (Ann. Missouri Bot. Gard. 14: 128) knew it only from Pasadena, Calif., in 1927.
- *blattaria* Fr. Common in frondose woods; Univ.; June to mid-July. Pileus $1\frac{1}{2}-3$ cm. wide, smooth, hygrophanous, buff; spores $7-9 \times 4-5 \mu$.
- *caperata* (Pers.) Fr. Not uncommon on the ground in coniferous woods; Ingolf, Kenora. Stem with a suggestion of a volva; spores rough, $12-16 \times 8-10 \mu$.
- *confragosa* Fr. Common on rotted, mossy trunks of *Betula alba* var. *papyrifera*, Populus, etc.; Univ., Victoria Beach and eastward; May-Aug. $6-8 \times 4-6 \mu$.
- *destruens* Brond. On old wood; Gimli; T. Johnson. Pileus pallid; spores $7\frac{1}{2}-9\frac{1}{2} \times 4-6 \mu$.
- *discolor* Peck. On old wood; Univ., Victoria Beach. $8\frac{1}{2}-10 \times 4-6 \mu$.
- *duroides* Peck. From buried sticks; Univ. Pileus yellowish, 3-5 cm. wide; spores $6-8 \times 3-4 \mu$. The plant resembles a *Stropharia*, and Dr. Overholts suggests that this small form is comparable with *S. obturata* Fr.
- *erebia* Fr. Three collections in leaf-mold; Victoria Beach. Spores $10-15 \times 6 \mu$; cystidia present.
- *erinaceola* Peck. Occasional on old deciduous wood or fallen branches; Univ. eastward. A distinctive reddish, scaly, small species; spores $6-8 \times 4-5 \mu$.
- *Johnsoniana* (Peck) Atk. Not uncommon in leaf-mold in deciduous woods; Univ. Pileus yellowish, with few or no scales; spores definitely purple.
- *marginata* (Batsch) Fr. On old wood and sawdust; Univ., eastern Man. It has been especially common in a poorly lighted ice-house on sawdust, and these plants are often very caespitose, the stems abnormally elongated. $7-10 \times 4\frac{1}{2}-6 \mu$.
- *mutabilis* (Schaeff.) Fr. On old wood; Victoria Beach; June. Pileus to $3\frac{1}{2}$ cm. wide, smooth; stem scaly; spores $6\frac{1}{2}-8 \times 4-5 \mu$, smooth; cystidia none.
- *?mycenoides* Fr. In moss; Clear Lake. Pileus 10-15 mm. wide, striate half-way to centre, very hygrophanous, drying first at the centre; gills adnate; annulus near apex of stem; spores $8-10 \times 5-6 \mu$, truncate; sterile cells on edges of gills.

- Pholiota praecox** (Pers.) Fr. On the ground; Univ.; June. The pileus fades to whitish. Not commonly found in Man.
- **?rigidipes** Peck. On old wood; Univ. Dr. Overholts was not sure but that the specimens belong in *Fammula*. Spores $7-8 \times 4-5 \mu$; cystidia fusiform, brown, $25-35 \times 9-12 \mu$.
- **?rugosa** Peck. On sawdust in an ice-house; Univ. Plants persistently ferruginous; spores $9-12 \times 5-6 \mu$, smooth.
- **Schraderi** (Peck) Overholts. In woods; Univ., Victoria Beach. This large and striking species was reported in "The Fungi of Manitoba" as *P. fulvosquamosa*, but Dr. Overholts points out it cannot be that, because there are abundant cystidia. The pileus and stem, however, are scaly as in *P. fulvosquamosa*. The spores are purple, and one looks for it at first in *Stropharia*, where Peck placed it.
- **spectabilis** Fr. On fallen logs of *Acer Negundo*, etc.; Univ., Victoria Beach. Specimens were found during four successive autumns, 1927-1930, on a large log cut down about 1924 and lying in the edge of the woods.
- **squarrosa** Fr. On wood; Minaki, Univ., Victoria Beach. Pileus somewhat viscid; spores $7-8 \times c. 4 \mu$.
- **squarosoides** Peck. On stumps and logs of *Populus*, etc.; Univ. eastward and around Lake Winnipeg. More common in Man. than *P. squarrosa*; plants more caespitose and scaly than in that species; spores $4-6 \times 3-4 \mu$.
- **temnophylla** (Peck) Sacc. On the ground at the edge of woods; Victoria Beach. Dr. Overholts doubts that this species is distinct from *P. praecox*. He found the spores to be $8-11 \times 6-8 \mu$ in the specimens sent him.
- Pluteolus coprophilus** Peck. Not common on manure piles and in dung cultures in the laboratory; Univ., Winnipeg. $12-14 \times 8-9 \mu$.
- **expansus** Peck. On debris and rich soil; Matlock to Univ. $10-13 \times 7-8 \mu$.
- **reticulatus** Fr. On old wood; Univ., Victoria Beach. Pileus 1-3 cm. wide, very viscid, purplish-gray; spores $10-12 \times 4-6 \mu$.
- Tubaria autochtona** (Berk. & Broome) W. G. Smith. On bare black soil; Univ. Pileus 5-10 mm. wide, white, silky; gills white then brown, decurrent, intervenose; stem 10-20 \times 1 mm. white, nearly smooth, mycelioid below; spores $7-8 \times 4 \mu$, uniguttulate.
- **furfuracea** (Pers.) W. G. Smith. Common on wood, earth and moss; Univ. northward. $7-9 \times 4-6 \mu$.

Porphyrospora

- Hypholoma appendiculatum** Fr. In woods; Univ., Victoria Beach. Pileus up to 9 cm. wide, brown drying to isabelline; spores $7-9 \times 4 \mu$; cystidia on sides and edges of gills.
- **Artemisiae** Pass. On sawdust in an ice-house; Univ. Pileus 2-6 cm. wide, dark chestnut brown and conspicuously covered with white silky fibrils when moist, tan and apparently glabrous when dry; gills white then purple, often with drops, broad, close, edge whitish; stem 5-10 cm. \times 2-6 mm., whitish pruinose at apex, striate; spores $8-10 \times 5-7 \mu$; sterile cells and a few cystidia on edges of gills. Dr. J. E. Lange considered that the fresh specimens were like the plants he calls *H. Artemisiae* in Denmark. It appears distinct in the ice-house; in the field it might pass as *H. incertum* or a related species.
- **?cinereum** C. S. Parker. In woods; Birds Hill, Univ. Pileus hygrophanous, ochraceous on drying, livid when moistened; stem slightly striate at apex; spores $7-9 \times 4-5 \mu$; cystidia on edges of gills, a few on sides.
- **?coronatum** Fr. In frondose or mixed woods; Clear Lake, Univ. Plants solitary; spores $6-8 \times 4 \mu$; cystidia on edges of gills.
- **elongatipes** C. S. Parker (*H. longipes* Dearness and Bisby, 71:113, not *H. longipes* Peck). In a cellar; Univ.; possibly this species in the woods near Beausejour. This fungus was common in a "dug-out" in 1927 and 1928; it has not been seen with certainty since the filling-in of that cellar. Here, as in the ice-house mentioned above, somewhat abnormal conditions result in modifications of the plants; but this species did not seem to fit any known description.
- **fasciculare** (Huds.) Fr. Not uncommon on or near wood; Univ. to Victoria Beach and eastward. The gills soon become green.
- **hydrophilum** (Bull.) Fr. Caespitose in woods; along the Red River and eastward.

- Hypholoma incertum* Peck. Common on lawns, or sometimes in woods; along the Red River to Victoria Beach.
- *irregulare* C. S. Parker. In woods; Victoria Beach. Spores angular, $c. 6 \times 4 \mu$. A species collected at Clear Lake on a decayed stump has very irregular spores $9-11 (13) \times 6-8 \mu$, definitely purple; pileus brown, scaly, about 2 cm. wide. This species was not found described in *Hypholoma* or *Inocybe*.
 - *?lachrymabundum* Fr. In woods; Univ.
 - *Polytrichi* Fr. In a Sphagnum bog; Ingolf; J. E. Lange and G. R. Bisby. Pileus small, yellowish, brownish at centre; stem very long, tawny; spores $9-11 \times 5-6 \mu$, brownish-purple. Perhaps better placed in *Psilocybe*.
 - *sublateritium* Fr. Common on wood; Univ. to Victoria Beach and eastward. The Manitoba collections have sometimes been made in early June (1928, 1931, 1933, 1935), perhaps because cold weather prevented fruiting in autumn.
 - *velutinum* (Fr.) Quél. Common in woods, on lawns, sawdust, etc.; Univ. to Victoria Beach and eastward. Spores $10-13 \times 6-8 \mu$, slightly rough.
 - *vinosum* Kauff. In frondose woods; Univ. Pileus 15-20 mm. wide, nearly black when dry; stem with a wine-colored juice, bulbous at the base; spores $5-6 \times 2\frac{1}{2}-3 \mu$, smooth, purple. This seems to be Kauffman's species, described from Michigan; it has been found but once in Man.
- Psalliota abruptibulba* Peck. Sometimes abundant in frondose or mixed woods across Man. Pileus large, whitish, turning yellow when rubbed; stem with an abrupt bulb at base. One of the best edible mushrooms.
- *arvensis* Fr. Not uncommon in fields, grassy woods, etc.; Univ. to Victoria Beach.
 - *campestris* Fr. Commonly cultivated; sometimes on lawns, etc., in Man. and Sask. The commercial production of mushrooms in and near Winnipeg probably averages about 100 lb. per day. Fungi parasitic on the mushrooms have caused little damage. Many facts regarding *P. campestris* are given by Buller (82, vols. I and II).
 - *diminutiva* Peck. On the ground in mixed woods; Victoria Beach. Pileus small, with reddish fibrils; annulus persistent; spores $5-6 \times 3 \mu$.
 - *haemorrhodaria* Fr. Rare in woods; Berens River, Victoria Beach. Pileus scaly; the flesh and stem turn red when broken; spores $5-7 \times 3-4 \mu$.
 - *placomyces* Peck. In or near woods; Univ., Winnipeg. Pileus nearly covered with chestnut-brown appressed scales; stem bulbous; annulus double; spores $5-7 \times 4 \mu$.
 - *Rodmani* Peck. Occasional on lawns; Univ., Winnipeg. Pileus glabrous, white becoming cream-colored; stem short, solid; spores $c. 6 \times 5 \mu$.
 - *subrufescens* Peck. In frondose woods; Univ. Pileus large, odor of almonds.
- Psathyra persimplex* Britz. On sticks and mossy wood; near Beausejour and at the Univ. Pileus 1-2 cm. wide, campanulate, watery-brown and striate, then isabelline and atomate; gills broad, subdistant, edge white; stem 1-5 cm. long, 1-2 mm. thick, whitish; spores $10-12 \times 6 \mu$; cystidia present.
- *?semivestita* Berk. & Broome. On dung; Univ. Pileus 8-10 mm. wide, innately silky, gray-brown; stem very slender, pale; spores mostly $14 \times 8 \mu$.
 - *umbonata* Peck. On old wood; Univ.; June-Sept. $14-16 \times 7-9 \mu$.
- Psilocybe foenicicii* Fr. Very common amongst grass in damp periods; Univ. north and eastward; usually about June, sometimes in September. Spores $12-16 \times 8-10 \mu$, slightly rough.
- *merdaria* Fr. On horse dung; Univ. Spores purplish, $11-18 \times 7-9 \mu$.
 - *?murcida* Fr. In damp woods; Birds Hill, Univ. Spores $10-13 \times 6-8 \mu$; cystidia present.
 - *subviscida* Peck. On pastured ground, lawns, and moss; Univ. eastward. Pileus 1-1½ cm. wide, slightly viscid, dark brown then ochraceous; gills whitish at first; stem brownish, innately fibrillose, sometimes with a suggestion of an annulus; spores $7-8 \times 4-5 \mu$.
 - *uda* (Fr.) Battaille. In rich soil; Univ. Pileus 1-2 cm. wide, olivaceous with brownish centre; stems long and slender; spores $17-20 \times 9-11 \mu$.
- Stropharia coronilla* Bres. In frondose woods; Univ. Pileus 3-6 cm. wide, dark watery-brown then tan, sub-viscid; annulus striate above, sometimes evanescent; spores $7-9 \times 4-5 \mu$; sterile cells on edges of gills saccate.

- Stropharia epimyces** (Peck) Atk. As pointed out in "The Fungi of Manitoba," Kauffman's report of this fungus "as far west as Winnipeg" was an error. There has recently come to light a specimen collected perhaps thirty years ago, locality not known but probably in Man. This doubtful record is the only one. See Buller (82, vol. III).
- **psathyroides** Lange. In a Sphagnum bog; Ingolf; J. E. Lange and G. R. Bisby. One specimen found, and recognized at once by Dr. Lange to be his species described from one locality in Denmark. The spore print is purple, the spores $8-10 \times 4-4\frac{1}{2} \mu$; cystidia bottle-shaped, $c. 30 \times 10 \mu$. This provides another example of the wide distribution of fungi; and of the small knowledge of the range of many species.
- **semiglobata** Fr. Common on dung, sometimes on soil; Norway House to Univ., Man.; Saskatoon, Sask. Described and illustrated by Buller (82, vol. II).
- **stercoraria** Fr. Common on dung; Univ. Very similar to or identical with *S. semiglobata*. The spores are somewhat longer, reaching 21 or even 24μ in length. Cystidia have not been found on the sides of the gills.

Melanosporae

- Anellaria separata** (L.) Karst. Common on horse dung; Norway House to Univ. Discussed and illustrated by Buller (82, vol. VI). $18-22 \times 10-12 \mu$.
- Coprinus* aphthosus** Fr. (*C. lagopiles* Karst.). In a root-cellar at the Univ., growing at the bases of decaying supports of Populus; 1929, 1934 and 1936, June to Sept.; plentiful when it appeared; also found on or near old wood in East Kildonan, Winnipeg. Det. W. F. Hanna, who finds mycelium of polysporous cultures to bear clamp connexions; such pure cultures grown on sterile horse dung and soil produced good fruit bodies. See Figs. 1-5.
- **atramentarius** Fr. Common in Man., and collected at Pike Lake, Sask. The inky cap is lignicolous, and occurs around stumps, over buried roots, etc. See description and illustrations by Buller (84; 82, vol. III).
- **brevilanatus** Buller (*nomen nudum*; 82, vol. III: 308). Near *C. lagopus*, of which it might be considered a variety.
- **comatus** Fr. Common on lawns, roadsides, etc., in Man. and at Saskatoon, Sask. Fully described and illustrated by Buller (82, vols. I and III) and by I. Mounce (134).
- **cordisporus** Gibbs. Not uncommon as a coprophilous species, along with *C. curtus* and *C. ephemerus*; Univ., Winnipeg. The spores are heart-shaped. The basidia are usually 4-spored, but a bisporous form of this species was found in 1935 by W. F. Hanna on old cow dung (see Fig. 8). Josseland (Ann. Soc. Linné. Lyon, 77, 1933, p. 20 of reprint) records both the 2-spored and 4-spored forms of this species in France, and considers that *C. cordisporus* is a synonym of the earlier *C. Patouillardii* Quél.
- **cortinatus** Lange. On old dung of horse or cow; Univ. The fungus came up in the laboratory on the dung gathered in the woods in Sept. by W. F. Hanna.
- **curtus** Kalchbr. (*C. plicatilloides* Buller, 82, vol. I: 69). Common on dung, particularly of horse. It is sometimes found in the field, and usually found when fresh horse dung is placed in a damp chamber, appearing on about the tenth day as the first Agaric. The very young pileus is foxy-red, the expanded pileus bears minute reddish or whitish scales interspersed with clavate hairs; the small disc is finally depressed; the spores are deep black; cystidia are absent. See Buller (82, vols. I, II, IV), and Figs. 6 and 7.
- **domesticus** Fr. On old logs, especially of *Ulmus americana*; Univ. to Victoria Beach and eastward. The pilei arise from a reddish-yellow *Ozonium* (*O. auricomum* Link) between the bark and the wood, and have been grown from this in the laboratory at the Univ. The species somewhat resembles *C. micaceus*; the spores are brownish. Figured and discussed briefly by Buller (82, vol. III). *Coprinus radians* (q.v.) is perhaps the same species.
- **ephemerus** Fr. Common on dung, especially in laboratory cultures; Univ., Winnipeg. The name "ephemerus" has been applied in the literature to several small Coprini; it is here used for the form with brownish pilei bearing numerous cylindrical or pointed hairs (pilocystidia), without cystidia on the gills; the pilei expand at night. See also Buller (82, vol. II), and Figs. 9 and 10.

* This summary of the species of *Coprinus* found in Manitoba is from the thorough and extensive work of A. H. R. Buller and W. F. Hanna.

- Coprinus flavolanatus* Buller (*nomen nudum*; 82, vol. III: 3-8). Near to, or a variety of, *C. lagopus*, from which it differs in having a yellowish-white down composed of thin branched cells, and more slender cystidia.
- *hemerobius* Fr. Amongst leaves and grass in deciduous woods; Univ. Buller (82, vol. IV) considers *C. hemerobius* to be a synonym of *C. plicatilis*.
 - *Hansenii* Lange or *C. sociatus* Fr. On old dung probably of horse; Univ.; Sept. One or possibly both of these species developed in the laboratory from the dung collected in the woods by W. F. Hanna. The two species as described by Lange are much alike.
 - *Hendersonii* Berk. Rare on old cultures of horse dung; Univ. Stem with a distinct annulus at or below the middle; pileus 7-10 mm. wide, with a lemon tinge at first, and a scaly meal; stem up to 35 mm. long; spores rounded-pyriform, $8-10 \times 7-8 \mu$; cystidia present.
 - *lagopus* Fr. (probably including *C. fimetarius* Fr. as commonly reported in the literature). Common on horse dung in Man. The pilei bear whitish hairy tufts or scales. Hanna (126, 128) has studied this species, and has shown by matings that it is identical in Canada and England. Described and illustrated by Buller (99, 82, vols. II, III, IV, V) and studied also by Dorothy Newton (136), Irene Mounce (132, 133) and H. J. Brodie (79, 80). See Figs. 11 and 12.
 - *laniger* Peck. On old charred wood; Univ. Dr. Hanna found the specimens and spores to agree with a collection determined by Kauffman as *C. laniger*.
 - *longipes* Buller (71: 118). On horse dung in laboratory cultures after several weeks; Univ. Illustrated and discussed briefly by Buller (82, vol. IV). It resembles *C. plicatilis*, but grows on dung instead of grassy places, has a slightly smaller depressed disc, has gills which deliquesce at their edges instead of remaining entire, and usually has a longer stem. See Figs. 13 and 14.
 - *macrorhizus* (Pers.) Rea. Common on heating stable manure in Man. and elsewhere in North America and in Europe; very rarely obtained in laboratory cultures. Pseudorhizae of variable length, or sometimes absent. Gills wider than those of *C. lagopus* and, as can be seen in the field, held together by cystidia during autodigestion. Illustrated and described by Buller (82, vols. II, III, IV, VI).
 - *micaceus* Fr. Common as a lignicolous species around stumps, roots, etc., in Man. It is never coprophilous. The basidia are tetramorphic; the meal-cells on the pileus are rounded and not ornamented with crystals of calcium oxalate. Described and illustrated by Buller (82, vol. III).
 - *miser* Karst., *sensu* J. E. Lange. On very old horse dung in laboratory; Univ.; coll. W. F. Hanna. Dr. Hanna finds that the secondary mycelium bears clamp connexions. Jossierand (Ann. Soc. Linné. Lyon, 77, 1933, p. 21 of reprint) considers *C. miser* to be identical with *C. subtilis* Fr. See Fig. 15 of spores.
 - *narcoticus* Fr. Rare on old wet horse dung in the laboratory, Univ. Appeared in 1912 and 1922 only. Distinguished by its strong, unpleasant odor, and by the apparently unique feature of possessing basidia normally tristerigmatic and trisporous, as described and illustrated by Buller (82, vols. II, III).
 - *niveus* Fr. On horse dung; Univ. Pileus snow-white, covered with pulverulent meal. See Buller (82, vols. II, III, IV), and Miss Mounce (132, 133).
 - *ovatus* Schaeff. Occasionally seen at Winnipeg; but this "species," as illustrated by Cooke, Pl. 659, is undoubtedly only a starved or depauperate form of *C. comatus*.
 - *parvisporus* Buller (71: 118). Frequent in troops on cow dung kept moist for about five weeks in the laboratory; Winnipeg. Spores small, mostly $6 \times 3\frac{1}{2} \mu$; the only species in which the long basidia are sometimes surrounded by only two paraphyses. The pileus expands conically and sheds its spores only during the night. It is smaller than *C. stereorarius*, has white instead of gray meal on the pileus, and the meal-cells are smaller and ornamented with more numerous crystals of calcium oxalate. See Figs. 16-18.
 - *phaeosporus* Karst., *sensu* J. E. Lange (*C. Brassicae* Peck). From base of stems of Marquis wheat; Univ.; W. F. Hanna. Dr. Hanna finds the fungus to be bisexual, and that the secondary mycelium bears clamp connexions. See Figs. 19-25.
 - *plicatilis* Fr. Common amongst grass in woods in Man. The gills do not deliquesce, but Buller (89) points out that it is a *Coprinus* rather than a *Psathyrella* because the spores ripen and are discharged from below upwards, and the basidia are dimorphic. The pileus

does not become revolute, but remains broadly convex. Described and illustrated by Buller (82, vols. I, II, III, and especially IV); see also Figs. 26-27 in this publication.

Coprinus ?quadrifidus Peck. On old wood and debris; Winnipeg, Victoria Beach.

— **radians** (Desm.) Fr. Rather common on old wood, etc., in Man. Perhaps the same as *C. domesticus*. Vandendries (Cellule, 35:129, 1924) states that *C. radians* is bisexual, and that the secondary mycelium bears clamp connexions. Brunswick (Bot. Abhandl. 1924. Heft 5), however, did not find clamp connexions in the cultures he identified as *C. radians*. Dr. Hanna finds both monosporous and polysporous cultures of a *Coprinus* found in Manitoba, which answers the description of *C. radians* (and perhaps also that of *C. domesticus*) to be without clamp connexions. See Fig. 28 of fruit-bodies.

— **Rostrupianus** Hansen. Sclerotia common in autumn on lower sides of old weathered masses of cow dung in pastures; Univ., Kenora. Fruit-bodies were produced in the laboratory, and the fungus is described and illustrated by Dorothy Newton (135). Apparently not otherwise known in North America.

— **semilanatus** Peck. On horse manure; Univ. Apparently this species; studied by W. F. Hanna, who contributes the following data and Figs. 29-34. Pileus at first cylindric, white, densely covered with white meal consisting mostly of hyaline spherical cells 25-120 μ in diameter, together with a few elongated cells about $30 \times 6 \mu$; as the spores ripen, the pileus becomes grayish on the sides and slightly tawny towards the apex, and on expansion bluntly conical and plicate, finally revolute, umbonate, and split at the margin; up to 30 mm. in diameter. Gills black, sinuous when viewed on edge, crowded; cystidia globular, 20-30 μ in diameter, usually having an appendage about $10 \times 3 \mu$, abundant on the edges of the gills giving them a frosted appearance, but absent from the sides of the gills; basidia 4-spored. Stem up to 100 mm. in length, and 5 mm. in diameter, white, hollow, slightly attenuated upwards, coated with meal scales like those on the pileus. Spores black in mass, elliptical, with an apical germ pore, mostly $13\frac{1}{2} \times 8 \mu$.

Fruit-bodies appear singly or in groups on well rotted horse manure. This species was observed frequently at the University, Winnipeg, in the summers of 1934 to 1936. The spores germinate readily on horse-dung agar, and polysporous cultures usually produce numerous fruit-bodies after about 30 days' growth on sterile horse dung. This species is heterothallic, and probably bisexual, as six monosporous mycelia, when paired together, fell into two sexual groups. Clamp connexions are present on the diploid mycelium. *C. semilanatus* may be distinguished from *C. niveus*, which it resembles when the fruit-bodies are young, by its plicate pileus and the absence of cystidia from the sides of the gills.

— **stellatus** Buller (71:119). Gregarious on horse dung in laboratory cultures, Univ., 1911 to 1929. Similar to *C. ephemerus*, but pileus at first whitish-brown rather than yellowish-brown; the pileus splits stellately and rather regularly at the margin as it expands, and digests so that finally only the disc remains, with drops of liquid attached. Dr. Hanna finds that the spores are darker and larger than in *C. ephemerus*, and that cystidia are present only on the edges of the gills in *C. ephemerus*, whereas they are present on both sides and edges of the gills of *C. stellatus*. See Figs. 35-38.

— **stercorarius** Fr. On dung of cow or horse gathered fresh and kept wet in laboratory cultures; Univ. Small rounded black sclerotia develop on the surface of the dung, and each of these later may produce one to several grayish-white fruit-bodies covered with fugaceous meal-cells ornamented with crystals of calcium oxalate. Described and illustrated by Buller (82, vols. I, II, III); see also Miss Mounce (132, 133).

— **sterquilinus** Fr. Not uncommon on horse dung in laboratory cultures; Univ. White mycelium develops on the dung, and after four to six weeks the large fruit-bodies appear. The upper part of the stem turns black as the pileus expands. See Buller (88 and 82, vols. I, II, III and V), Hanna (127), and Miss Mounce (132, 133). See Fig. 39.

Coprinus sp. In soil and manure; Univ. Dr. Hanna provides this account of a species still unnamed:

Pileus at first campanulate, cream colored on the sides, slightly tawny towards the apex, up to 27 mm. in height and 18 mm. in width; covered with floccose detachable down consisting of multicellular filaments 30-60 μ in diameter; at the apex the down is aggregated into tufts; on expansion the pileus becomes conical and irregularly split at the margin. Gills black, crowded; cystidia on the gill-edges elliptical, about $70 \times 40 \mu$, those on the sides of

the gills cylindrical, $120-150 \mu \times 40-60 \mu$, almost bridging the interlamellar spaces; basidia 4-spored. Stem up to 85 mm. in length and 5 mm. in diameter, white, hollow, smooth, slightly attenuated upwards. Spores black in mass, broadly elliptical, with prominent hilum and conspicuous apical germ pore, mostly $13 \times 7 \mu$.

A single fruit-body of this species came up in the greenhouse at the Dominion Rust Research Laboratory, in a pot containing a mixture of soil and horse manure. The spores germinate well on horse-dung agar. When transferred to sterile horse dung, pure cultures covered it with a dense growth of white mycelium, but after two months had not produced fruit-bodies. When this pure-culture spawn was placed in a flower pot and covered with a thin layer of soil, fruit-bodies appeared in about two weeks. The fruit-bodies arise singly at a little distance from one another. Polysporous mycelium does not have clamp connexions.

This fungus may be distinguished from species such as *C. lagopus*, *C. macrorrhizus*, and *C. aphthosus*, which also have floccose pilei, by its cream colored pileus, and by the fact that the down on the surface of the pileus does not become separated into patches as the fruit-body expands. It has not been collected out of doors but, judging by its behavior in culture, its natural habitat is probably rich soil rather than manure piles. See Figs. 40-44.

Gomphidius ?gracilis Berk. In mixed woods; Kenora, Victoria Beach. Plants rather slender; pileus more or less umbonate, vinaceous in color; spores $18-21 \times 6 \mu$; cylindrical cystidia present. Probably a form of *G. viscidus* Fr.

— **maculatus** Fr. Occasional in coniferous areas; Minaki, Victoria Beach. Pileus and stem reddish; spores up to 24μ long.

— **nigricans** Peck. In coniferous woods; Kenora. The pileus becomes more or less black when dried at room temperature.

— **vinicolor** Peck, apparently. In coniferous woods; Kenora. Pileus small, reddish-brown; stem concolor, not yellow at base; spores $18-22 \times 6 \mu$; cystidia $95-120 \times 15-18 \mu$.

Panaeolus ?campanulatus Fr. On dung and in woods; Univ. It has not been possible to work out some of the Manitoban species of *Panaeolus* with accuracy. The smaller forms referred to here, with spores $15-17 \times 7-9 \mu$, may belong to *P. papilionaceus*. See Buller (82, vol. II).

— **retirugis** Fr. Common on dung, in pastured woods, etc.; Univ. eastward. $14-17 \times 9-11 \mu$.

— **solidipes** Peck. Not uncommon on manure piles or on dung cultures in the laboratory; Univ. The pileus seldom exceeds 6 cm. in width; stem long, solid; spores $16-20 \times 10-12 \mu$.

Psathyrella disseminata (Pers.) Fr. Rare in woods; Univ. The usual abundant colonies of this small species were found on May 27 and June 21, 1921; it has not been seen since. It is common in many regions elsewhere. See Buller (82, vol. III).

PHALLALES

Dictyophora Ravenelii (Berk. & Curt.) Burt (*Ithyphallus Ravenelii* (B. & C.) E. Fisch.).

Common on old sawdust and the waste from saw-mills; Cypress River, Kenora, Minaki.

Mutinus caninus (Huds.) Fr. (perhaps should be referred to *M. Ravenelii* (Berk. & Curt.) E. Fischer). In soil in a garden; Elkhorn, Man.; also collected at Regina and Saskatoon, Sask. Not common.

HYMENOGASTRALES

Hymenogaster mutabilis (Soehner) Zeller & Dodge. In a potato field beside deciduous woods; Univ. Dodge and Zeller, who determined this, record it (Ann. Missouri Bot. Gard. 21: 657) from only two other localities; Munich, Germany and Syracuse, New York. The odor was very strong when the fungus was collected.

Rhizopogon rubescens Tul. Under *Pinus Banksiana* in sandy woods; near Beausejour, at Kenora and Victoria Beach; det. S. M. Zeller. The fungus emerges partially from the soil; it is commonly about the color, shape, and firmness of a small yellow potato tuber, but bears reddish areas on the surface. Spores fusiform, $9-13 \times 4 \mu$.

Scotium agaricoides (Czern.) Hollos. Not uncommon along roadsides, or on piles of grass sod; Gimli, Morden, Univ., Man.; Battleford and Pike Lake, Sask. Illustrated and described by Buller (82, vol. II).

LYCOPERDALES

Astraeus hygrometricus (Pers.) Morgan (*Geaster hygrometricus* Pers.) Abundant on sand under *Pinus Banksiana*, etc.; Kenora, Victoria Beach and elsewhere.

- Bovista pila** Berk. & Curt. In fields and woods; Kenora, Univ., Victoria Beach. Spores spherical, c. 4 μ .
- **plumbea** Pers. In pastures or grassy woods; Berens River to Univ. and eastward. Spores oval, with long pedicels.
- Calvatia caelata** (Bull.) Morg. In woods; Clear Lake, Gimli, Univ. The sterile base sometimes becomes very large; that of Clear Lake specimens reached a foot in length, and 3–4 inches in thickness.
- **?craniiformis** (Schw.) Fr. Sent in from St. Boniface. Only the sterile base was present; it may be *C. caelata*.
- **cyathiformis** (Bosc) Morgan. In gravelly grassland; Brandon; it is probably this species that is common on the prairies of Sask. It may form large "fairy-rings." The interior of the plant is purple.
- **maxima** (Schaeff.) Morgan (*C. gigantea* (Pers.) Lloyd). Occasional in grassland or gardens; Gimli, Univ., Winnipeg. Specimens sometimes reach 1½ feet in diameter; one specimen weighed 16 lb. when collected.
- **saccata** (Vahl) Morg. In woods and grassland; Gimli, Man.; det. W. C. Coker; also found in Sask.
- Disciseda subterranea** (Peck) Coker & Couch. On sandy soil near Melita; C. W. Lowe. Plants with a sandy pad attached to the lower half; spores 5–7 μ , spherical, with a pedicel about 2 μ long; capillitium 3–4 μ wide.
- Gaeaster coronatus** (Schaeff.) Schroet. A small species found under *Abies balsamea*, etc.; Clear Lake, Kenora, Victoria Beach.
- **fimbriatus** Fr. In frondose woods; Univ.
- **floriformis** Vitt. (*G. delicatus* Morgan). Saskatoon, Sask. and Kenora, W. Ont.
- **fornicatus** (Huds.) Fr. A specimen was found on a boulevard in Winnipeg. Spores c. 4–5 μ , rough; capillitium 3½–7½ μ wide, walls roughened.
- **pectinatus** Pers. Fairly common under *Abies balsamea*, etc.; Victoria Beach.
- **rufescens** Pers. In frondose and mixed woods; Clear Lake and Univ., Man., Pike Lake, Sask.
- **saccatus** Fr. In frondose woods; Univ.
- **triplex** Jungh. Fairly common in woods; Univ. eastward.
- Lycoperdon atropurpureum** Vitt. Amongst moss in bogs and woods; Clear Lake and West Hawk Lake.
- **Curtisii** Berk. (or *L. Wrightii* Berk. & Curt.). In pastures; Gimli; forming "fairy-rings."
- **echinatum** Pers. In mixed woods; near Beausejour and at Ingolf.
- **gemmatum** Batsch. Common across Manitoba on leaf mold or decayed wood.
- **marginatum** Vitt. In sandy mixed woods; east of Beausejour and at Victoria Beach.
- **Muscorum** Morgan (*L. Polytrichum* Lloyd). Not uncommon amongst moss; eastern Man.
- **polymorphum** Vitt. (*L. cepiforme* Bull.). The common species on "fairy-rings" in lawns, pastures, golf courses, etc.; Norway House to Univ.
- **pyriforme** Pers. Common on old deciduous wood, stumps, etc., in Man.
- Mycenastrum corium** (Guers.) Desv. Occasional amongst grass, etc.; Univ., Man.; Saskatoon, Sask. Specimens sent in from Swan River were aberrant, or possibly a variety, according to Dr. Coker.
- Tylostoma albicans** White. Amongst grass; Univ.; det. C. G. Lloyd.
- **campestre** Morgan. Common on sandy soil in southwestern Manitoba; at Saskatoon and Sutherland, Sask.
- **rufum** Lloyd. Amongst grass; Univ.; det. C. G. Lloyd.

NIDULARIALES

- Crucibulum vulgare** Tul. On old wood; Kenora.
- Cyathus stercoreus** (Schw.) de Toni. Not uncommon on old cow dung; Univ.; Sept.-Nov.
- **striatus** (Huds.) Pers. Common on old wood; Univ. eastward in Man.; at Saskatoon, Sask., apparently from old wheat straw.
- **vernicosus** (Bull.) DC. Common on soil in grain fields and elsewhere in Man. and Sask. Some specimens, especially from Saskatchewan, are more hispid than the descriptions record.
- Nidularia pulvinata** (Schw.) Fr. (*N. pisiformis* Tul.). On old wood; Kenora.

SCLERODERMATALES

- *Sphaerobolus stellatus* Tode. On wood or on dung of cow, rabbit, etc.; Berens River to Univ. and eastward. Discussed and illustrated by Buller (82, vols. V and VI).

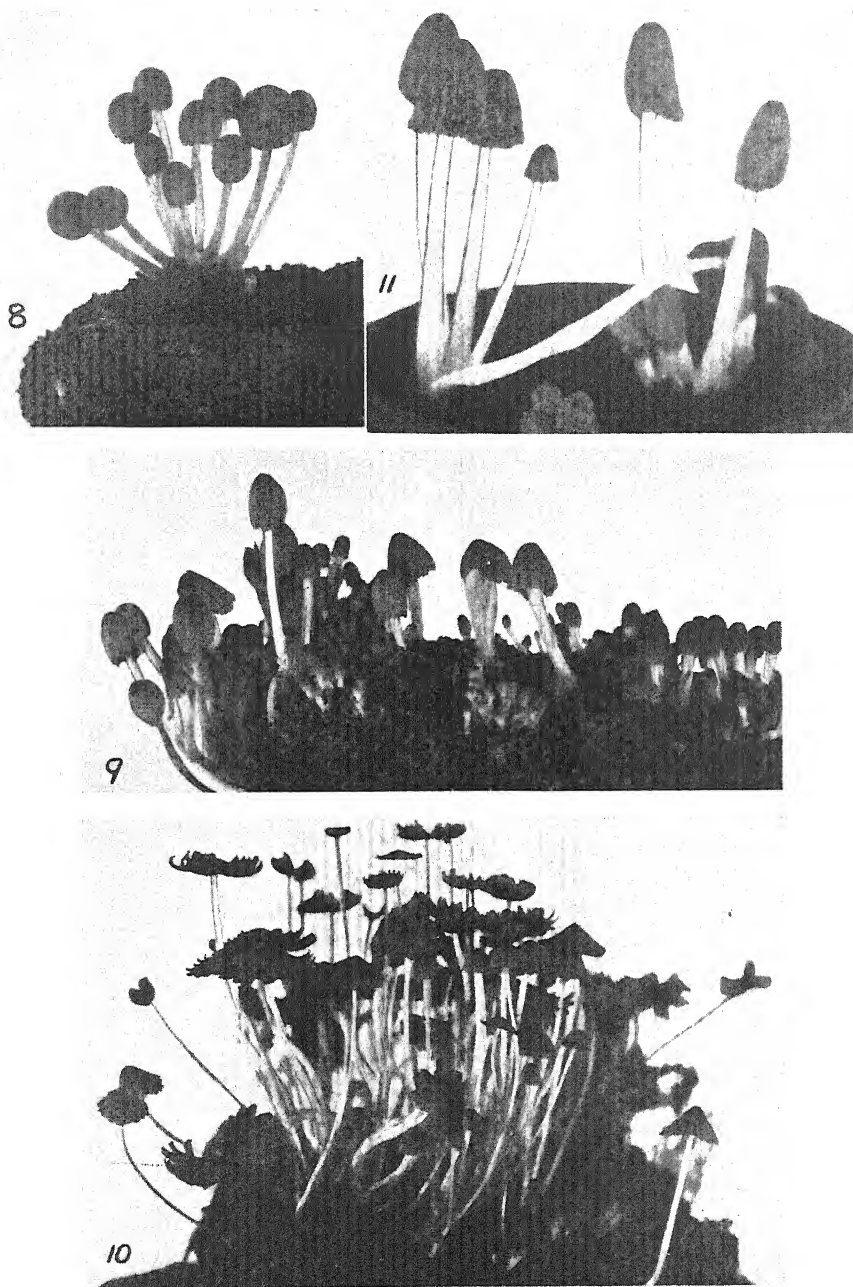
FUNGI IMPERFECTI

MONILIALES (HYPHOMYCETES)

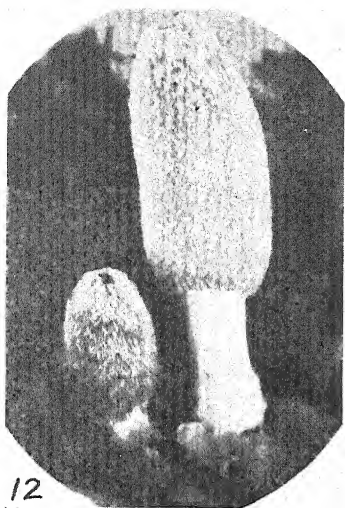
- Acremoniella atra* Sacc. Isolated from *Hordeum vulgare* from Morden by B. Peturson. Determined by E. W. Mason, who has made a careful study of this fungus (10). Other species resembling *Acremoniella* were found in soil.
- Acrostalagmus albus* Preuss var. *varius* Jensen. Isolated three times from a wooded soil near Winnipeg.
- *cinnabarinus* Corda. Occasionally found in surface soils, and rather common as a secondary organism on rotted potato tubers, old bean pods, etc., in Man.; in old stem of *Dahlia* and roots of *Triticum aestivum*; Saskatoon, Sask. This fungus is bright cinnabar-red in culture. Spores 3-5 (10) \times 1½-3 μ . Reputed to be a stage of *Nectria inventa*.
 - Actinomyces scabies* (Thaxt.) Güssow. Scab of tubers of *Solanum tuberosum* is common in most of the soils of Man. and Sask., since the majority of them have an alkaline reaction, and the scab organism is a native of some, at least, of these soils. Potato scab has been collected at Norway House, Man., at 54° N., near the northern limit of potato production.
 - Alternaria* ?*Amaranthi* (Peck) Hook. On leaves of *Amaranthus retroflexus*; Glenboro.
 - *Brassicæ* (Berk.) Sacc. emend. Bolle. On leaves of *Brassica Rapa* in Man., causing some injury to the variety Extra Early Purple Top Milan; injurious in 1934 to *Brassica oleracea* var. *botrytis* near Winnipeg, in fields which had grown cauliflower for several years; occasional on cabbage. Perhaps *A. Brassicæ* rarely on Cruciferous weeds such as *Brassica arvensis* and *Thlaspi arvense*; Univ. Spores large, 45-165 \times 14-20 μ .
 - [— *Citri* Pierce. On fruits of orange imported into Winnipeg.]
 - ?*Dianthi* Stevens & Hall. On *Dianthus barbatus*; Univ. Spores mostly 40-50 \times 15-17 μ .
 - ?*fasciculata* (Cooke & Ell.) Jones and Grout. On dead areas on leaves of *Ribes nigrum*; Indian Head, Sask. Although the spores are as described, the name is uncertain.
 - *Solani* (Ell. & Martin) Jones and Grout. Common but seldom injurious on leaves of *Solanum tuberosum* in Man. and at Indian Head, Prince Albert and Saskatoon, Sask. The same or a similar species occurs rarely on other Solanaceae, including *Lycopersicum esculentum*, *Solanum melongena*, *Nicotiana* sp., and *Physalis lanceolata* in Man. *Amaranthus retroflexus* in potato fields also is affected by an *Alternaria*, perhaps *A. Solani* rather than *A. Amaranthi*.
 - *tenuis* Nees, group. Not uncommon in soil. Spores about 28-45 \times 10-12 μ . Several other species of *Alternaria* found as saprophytes in soil and on dead parts of plants were not determined.
 - Arthrobotrys superba* Corda. On horse-dung cultures from Victoria Beach. The typical species, with six to eight or more whorls of 2-celled spores 24-28 \times 13-18 μ .
 - *superba* var. *oligospora* (Fresen.) Coemans. This variety, which may be only a less vigorous form of the preceding, is common in dung cultures; Univ. This fungus was observed by A. H. R. Buller to form mycelial loops which snare and kill larval nematodes, as pointed out by Zopf (Die Pilze, 1890, p. 17).
 - Aspergillus flavipes* (Bain. & Sart.) Thom and Church. This species is common in or near the surface of the soil of wheat fields or grassland. It has also been isolated from butter and from grasshoppers. Dr. Machacek has obtained it from the roots of *Triticum durum*. A striking fungus in culture, with a "forest" of long conidial heads. Some strains, at least, develop vigorously at 37° C.
 - *flavus* Link, group. Occasional in soil and butter. One test for this species is the production of kojic acid in cultures.
 - *fumigatus* Fresen. Rather common in or near the surface of soil, especially sod. From decayed plant parts the spores may reach butter. All cultures were found to grow readily at 38° C. This fungus may kill chickens: the death of nearly 400 young chicks near Winnipeg in a brooder house littered with the remains of corn ensilage is reported by Savage and Isa (137). *A. fumigatus* was readily isolated from the lungs of the chickens and from the ensilage.



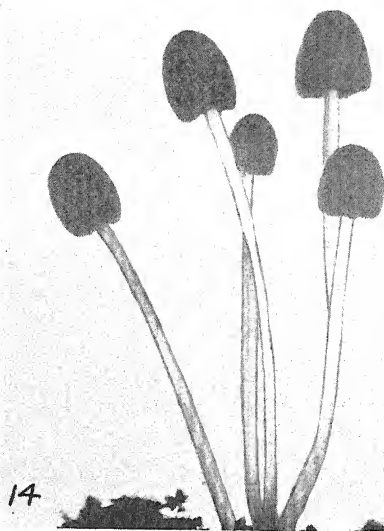
FIGS. 1-7. FIGS. 1-5, *Coprinus apthosus* Fr., $\frac{1}{2}$ natural size. Stages of development are shown. FIGS. 1, 3 and 5 from wild fruit-bodies, FIGS. 2 and 4 from pure cultures. (Photographs by W. F. Hanna). FIGS. 6 and 7, *Coprinus curtus* Kalchbr $\frac{1}{2}$ natural size. Fruit-bodies grown in pure culture by W. F. Hanna.



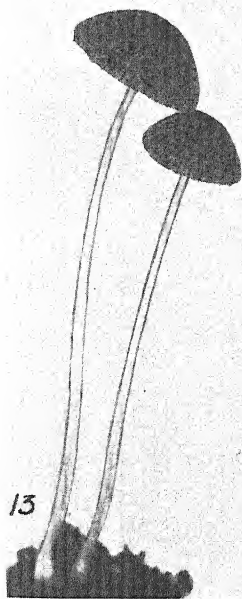
FIGS. 8-11. FIG. 8, *Coprinus cordisporus* Gibbs, natural size. Bisporous fruit-bodies grown in pure culture by W. F. Hanna. FIGS. 9 and 10, *Coprinus ephemerus* Fr., natural size. From pure cultures grown by W. F. Hanna. FIG. 11, *Coprinus lagopus* Fr., from pure culture, natural size, grown and photographed by W. F. Hanna.



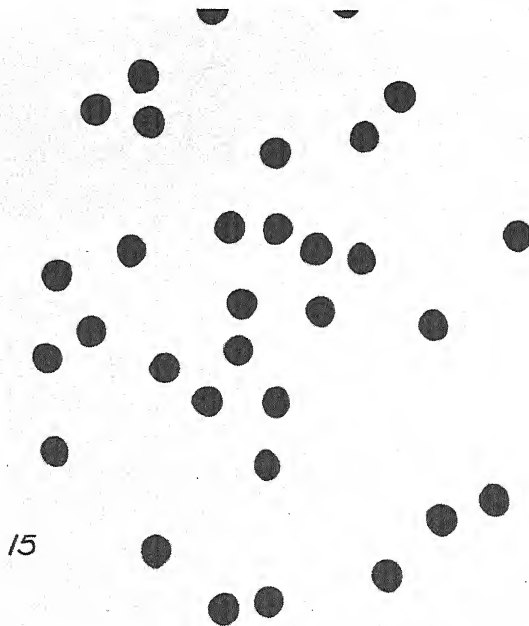
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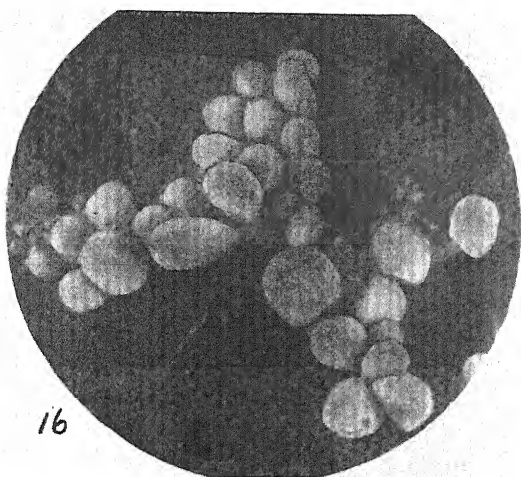


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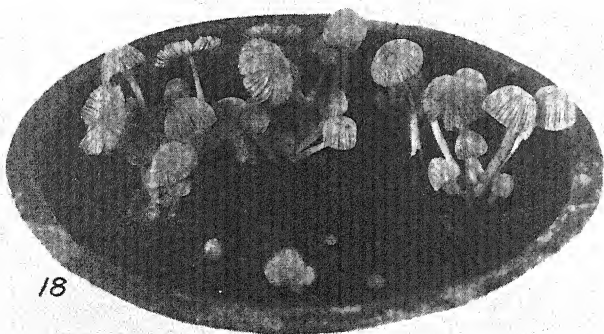
FIGS. 12-15. FIG. 12, *Coprinus lagopus* Fr., from pure culture, ($\times 2$), grown and photographed by W. F. Hanna. FIGS. 13 and 14, *Coprinus longipes* Buller, about natural size, from pure cultures by W. F. Hanna. FIG. 15, *Coprinus miser* Karst., dry spores $\times 650$. Photograph by W. F. Hanna.



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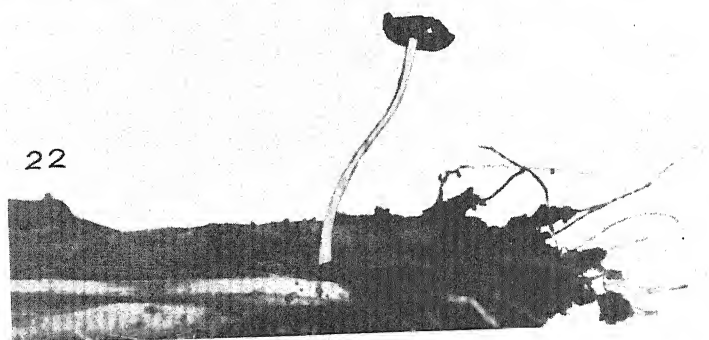
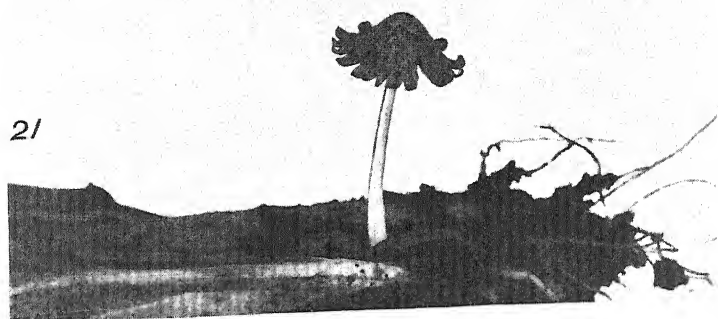
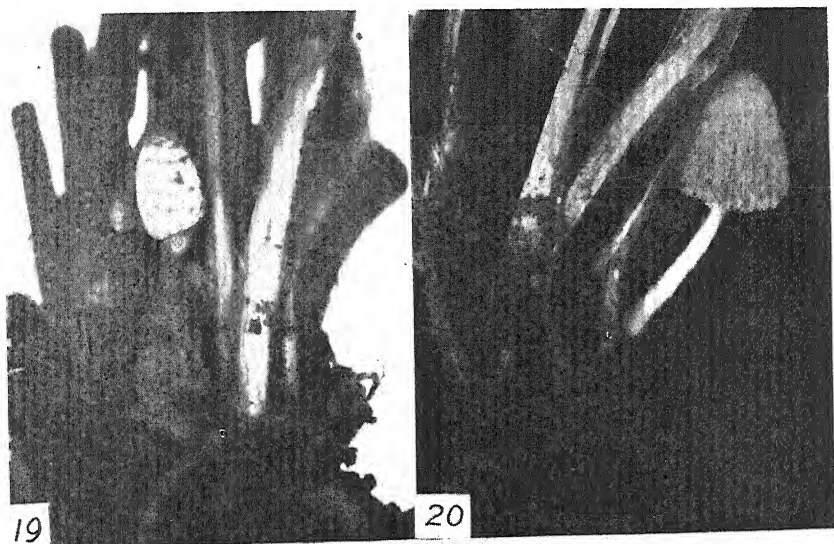


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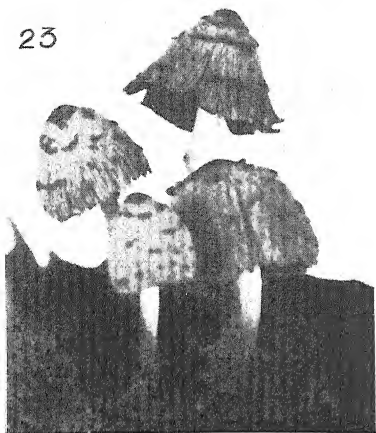
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FIGS. 16-18. *Coprinus parvisporus* Buller from pure cultures by W. F. Hanna. FIGS 16. and 17 $\times 2$, FIG. 18 $\times \frac{2}{3}$.

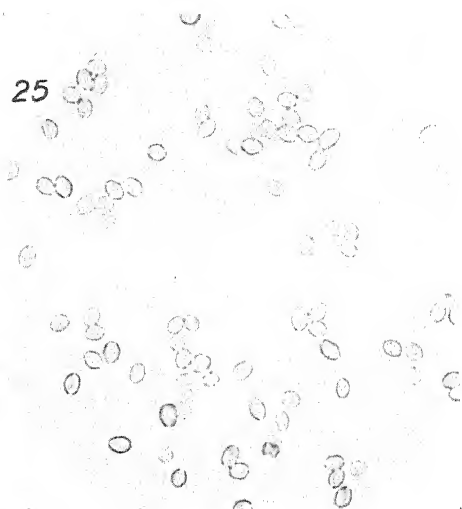


FIGS. 19-22. *Coprinus phaeosporus* Karst., showing development on a plant of Marquis wheat
FIG. 19 $\times 2$, FIG. 20 $\times 1\frac{1}{2}$, FIGS. 21 and 22 natural size. Photographs by W. F. Hanna.

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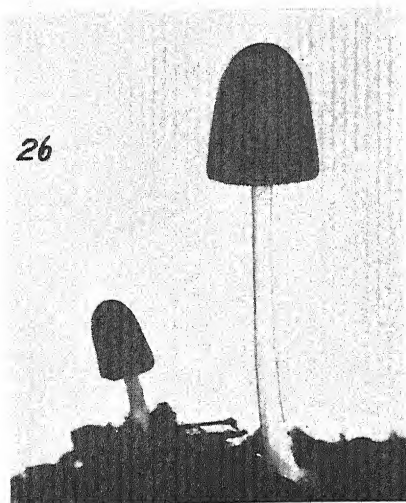
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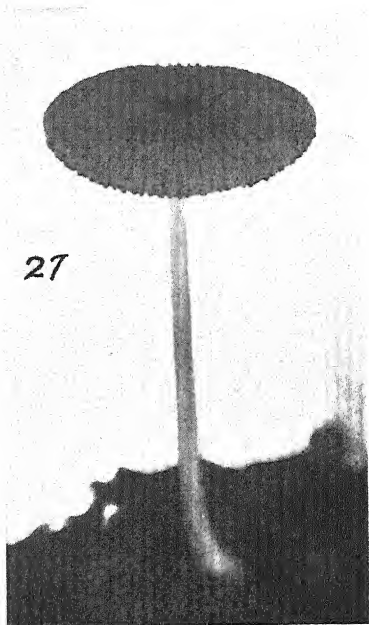
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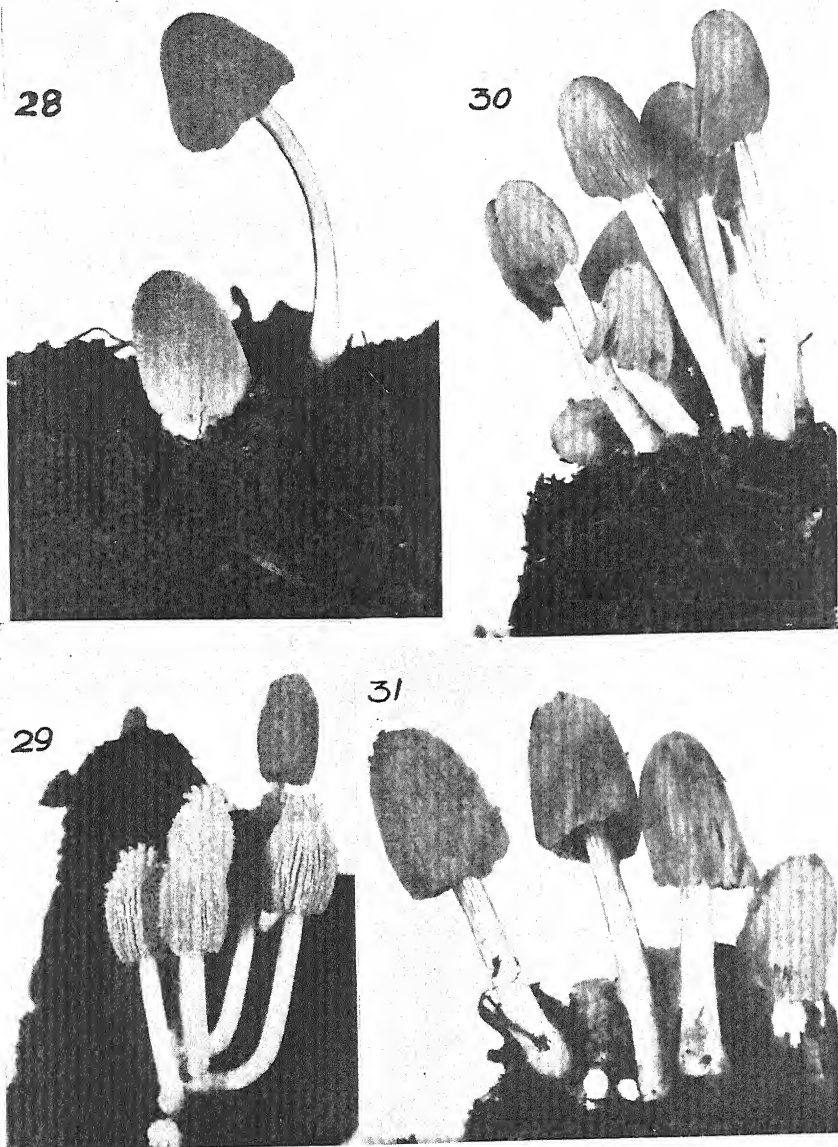
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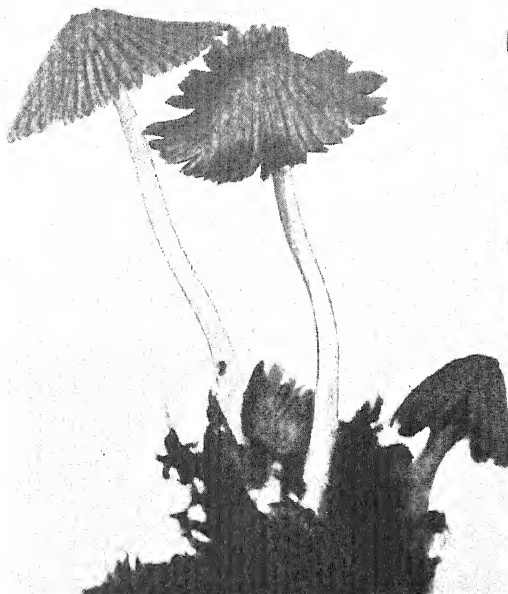


FIGS. 23-27. FIGS. 23-25, *Coprinus phaeosporus* Karst. FIG. 23, from a pure culture of mycelium $\times 2$. FIG. 24, dry spores $\times 650$. FIG. 25, spores in water $\times 400$. FIGS. 26 and 27, *Coprinus plicatilis* Fr. Wild fruit-bodies, natural size. Photographs by W. F. Hanna.

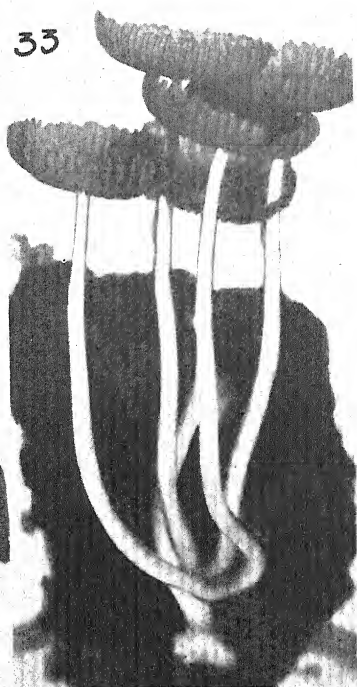


FIGS. 28-31. FIG. 28, *Coprinus radians* (Desm.) Fr., wild fruit-body, natural size. FIGS. 29-31, wild fruit-bodies of *Coprinus semilanatus* Peck, showing habit and development (see also FIGS. 32-34). Natural size. Photographs by W. F. Hanna.

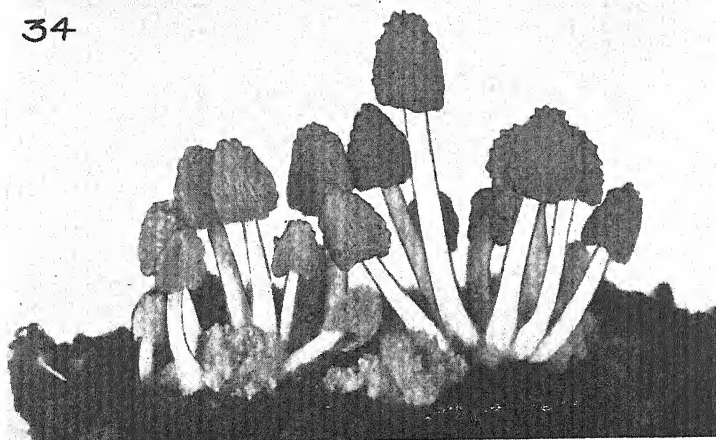
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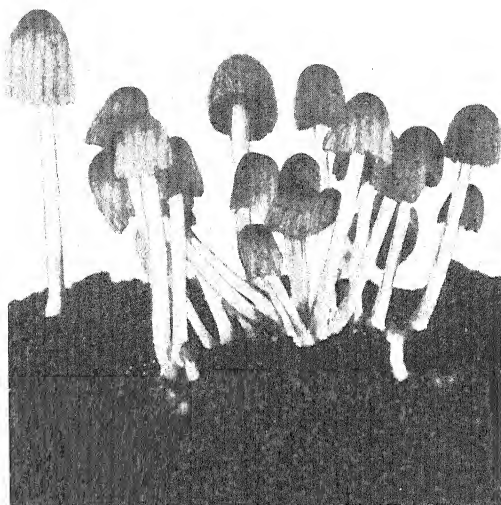


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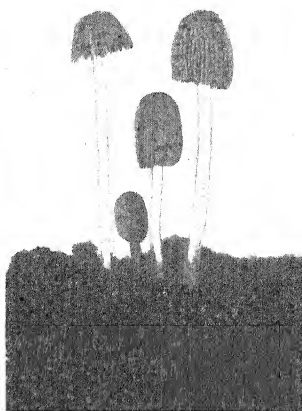


FIGS. 32-34. *Coprinus semilanatus* Peck, showing habit and development (see also FIGS. 29-31). Natural size. FIG. 34 from a pure culture, others wild fruit-bodies. Photographs by W. F. Hanna.

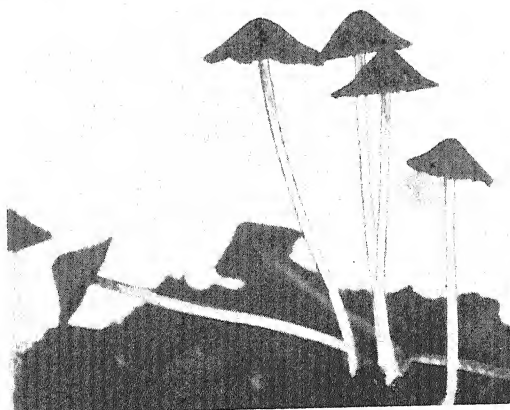
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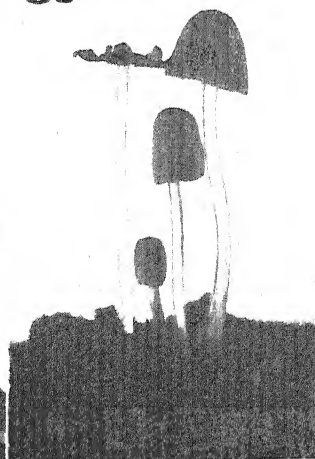
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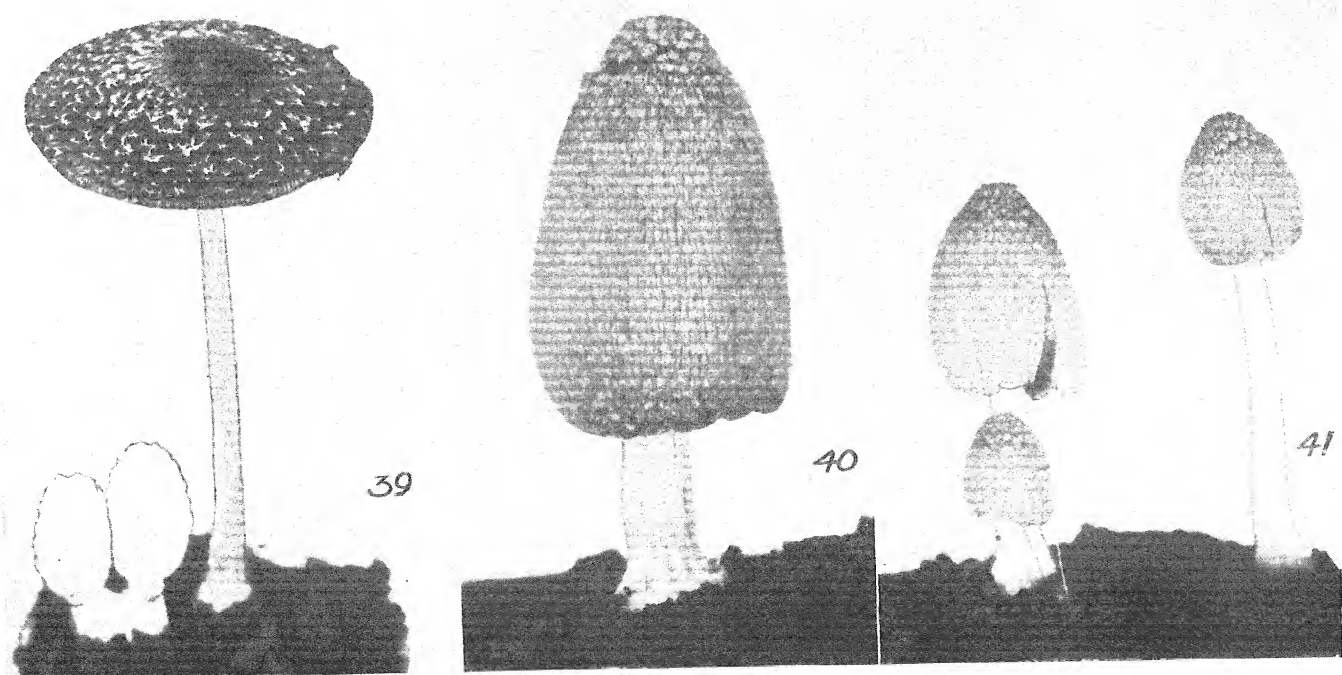


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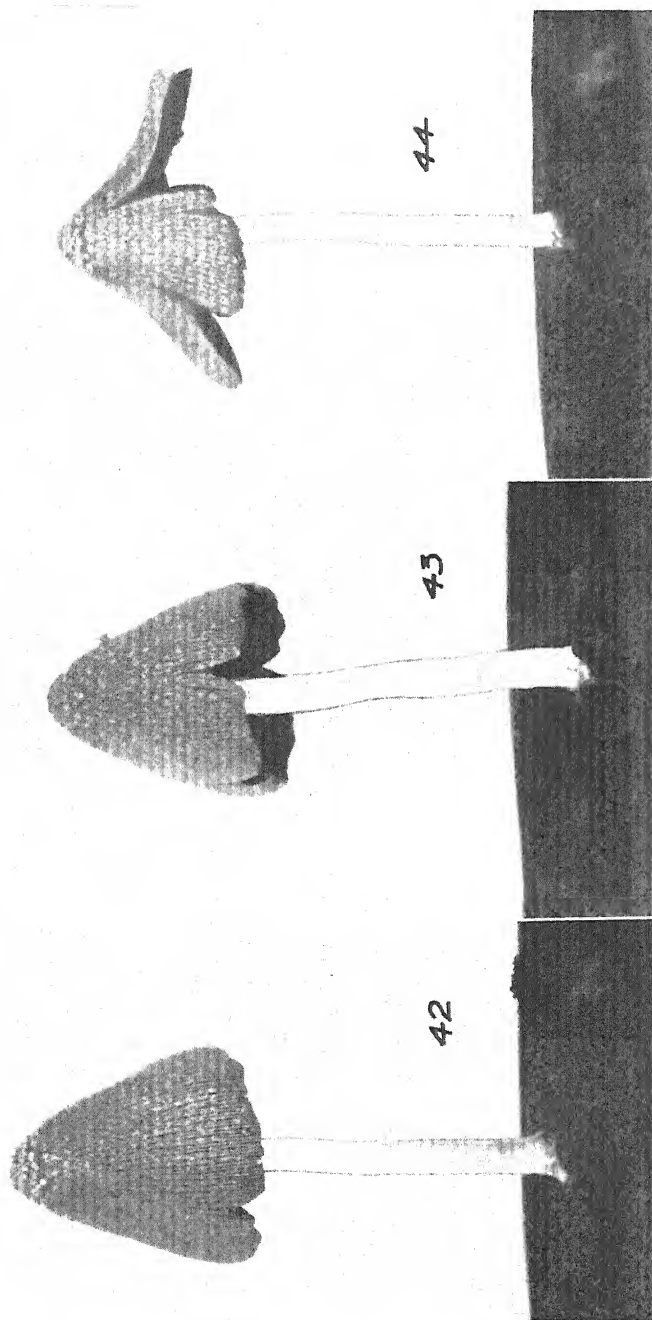


FIGS. 35-38. *Coprinus stellatus* Buller, natural size, developed in pure culture by W. F. Hanna.





FIGS. 39-41. FIG. 39, *Coprinus sterquilinus* Fr., natural size, developed in pure culture by W. F. Hanna. FIGS. 40 and 41. *Coprinus* sp., as described in text. From pure cultures grown and photographed by W. F. Hanna. FIG. 40 $\times 2$. FIG. 41, natural size.



FIGS. 42-44. *Coprinus* sp., as described in text. From pure cultures grown and photographed by W. F. Hanna. Natural size.



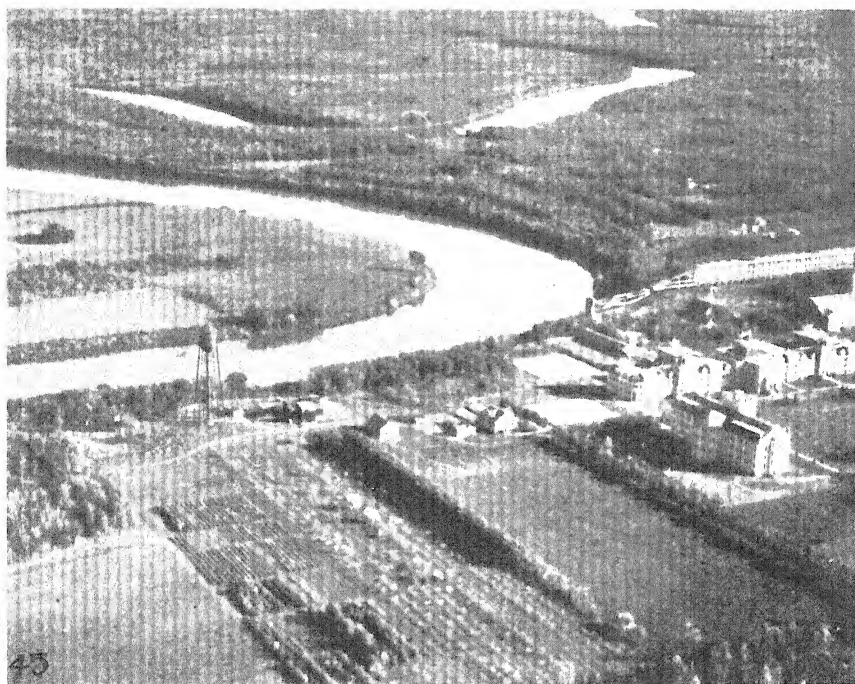


FIG. 45. Aerial view of the meandering Red River and some of the buildings of the University of Manitoba. A few of the woods and fields of the University site are shown. Photograph by No. 12 Squadron, R.C.A.F., Winnipeg.

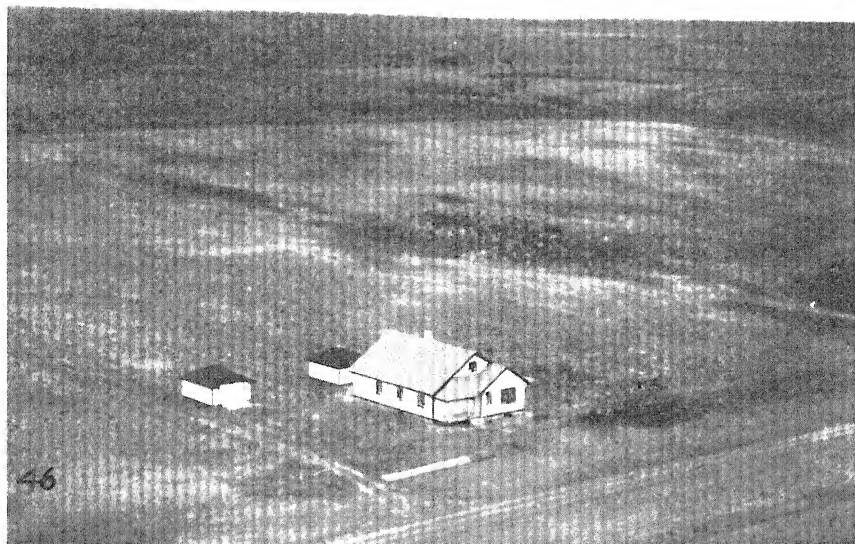


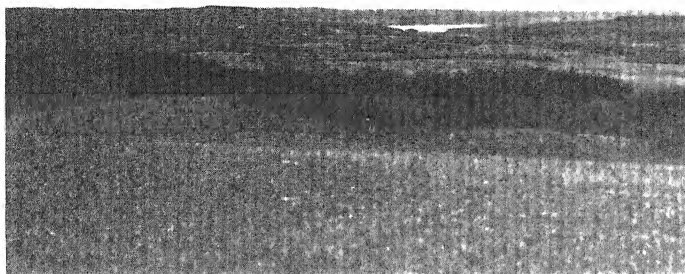
FIG. 46. View of a "Park Region" (Zone 3) near Carberry, Man. The terrain is somewhat rolling, the native prairie adorned here and there with clumps of shrubs or low trees. Photograph by No. 12 Squadron, R.C.A.F., Winnipeg.



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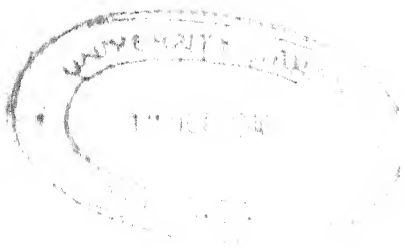
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FIGS. 47-49. FIG. 47. Looking across a large slough near Annaheim, Sask. *Scirpus validus* along the shore, mixed woods in the background.

FIG. 48. Sharply rolling "Park" country near Dana, Sask. A small lake is in the center background.

FIG. 49. A wheat field near St. Gregor, Sask. The land was cleared of a growth of trees and shrubs like that in the background. In such areas *Ophiobolus graminis* thrives.



- Aspergillus glaucus* Link, group. Common as a mold on slightly damp plant parts, as in herbarium driers, in Man. and Sask. Also obtained from cereal roots by Dr. Machacek. See *Eurotium herbariorum*.
- *insuetus* (Bainier) Thom & Church. Isolated from the roots of cereals by J. E. Machacek.
 - *nidulans* (Eidam) Wint. Rarely found in soil and butter. Asci are produced.
 - *niger* van Tiegh. Occasionally appears on cultures in the laboratory or in decaying fruit. This fungus, so common in more southern soils, is rare in the soils of Manitoba (76, 78). It is used to test the phosphorus content of soils.
 - *Okazakii* Okazaki. Isolated twice from soil in Man., and from kernels of wheat in Sask.
 - *repens* (Corda) Sacc. Isolated from damp tobacco; probably common in Manitoba.
 - *Sydowi* (Bain. & Sart.) Thom & Church. One isolation from soil, and one from flour in Man.
 - *terreus* Thom. Two isolations from butter. It was not obtained in soil isolations, although probably present.
 - *ustus* (Bain.) Thom & Church. Six isolations from soil, one from butter.
 - *versicolor* (Vuill.) Tirab. Isolated once from the soil.
- Bactridium flavum* Kunze. On decayed wood; Univ., Victoria Beach. The spores are large, $135-200 \times 40-65 \mu$, golden yellow, usually with four septa, two near the apex and two near the base, leaving a large barrel-shaped cell at the centre. The illustration in Rabenhorst's *Kryptogamenflora* does not properly show the septation. Mr. Mason finds that Manitoban specimens agree with those collected in England. *B. Ellisii* Berk., according to the late A. P. Morgan, is perhaps the same.
- Beauveria Bassiana* (Bals.) Vuill. On *Aphodius finetarius* and other insects; Univ. Spores spherical, $2-2\frac{1}{2} \mu$. Probably common: three collections identified by M. Timonin. No particular search has been made in Man. for entomogenous fungi.
- *densa* (Link) Vuill. One collection on a spider at Kenora. Mr. Timonin succeeded in obtaining cultures a year after the fungus was collected.
- Botryotrichum atrogriseum* van Beyma. Two isolations from soil. Spores $11-22 \mu$ in diameter. A similar or identical fungus was found on an old wasp's nest; spores $12-18 \mu$, surrounded by sterile hair-like hyphae.
- *piluliferum* Sacc. & March. Two isolations from a garden soil. The spores are somewhat smaller ($9-14 \mu$) than in the preceding species and the colonies in culture are paler.
- Botrytis Allii* Munn. Sometimes injurious to onions (*Allium cepa*) in storage. The fungus produces sclerotia and Botrytis fructifications, but the name has not been verified.
- *cinerea* Pers. Occasionally isolated from soil and butter; probably not a "true soil fungus," but ubiquitous on dying or dead plant parts. Forms of this species have been found weakly parasitic on *Asparagus officinalis*, *Pelargonium zonale*, *Lactuca sativa*, *Paeonia officinalis*, *Lilium* sp.; on fruits of *Fragaria* sp., *Corylus americana*, and *Rubus idaeus* var. *aculeatissimus* in Man.
 - ?*cinerella* Sacc. & Wint. On bark of *Populus*; Univ. The fungus agrees fairly well with a specimen so determined by J. B. Ellis. Spores about 5μ in diameter. The species of Botrytis on old wood, etc., are difficult to determine.
 - *elliptica* (Berk.) Cooke. Injurious to *Lilium* sp. cult; Dropmore. $12-15 \times 10-12 \mu$.
 - *geniculata* Corda, probably the conidial stage of *Hypoxylon* sp. On old wood; Univ. $7-10 \times 3-4 \mu$.
 - *Paeoniae* Oudem. Often injurious on *Paeonia officinalis* in Man. and at Saskatoon and Wolseley, Sask.
 - *phymatotricha* Sacc. or near. On an old board; Univ. Spores pale yellow, $5-7 \times 4-5 \mu$.
 - ?*pilulifera* Sacc. Recorded with considerable doubt on dung culture; Univ.
 - *terrestris* Jensen. Three isolations from soil. $3-4 \times 2\frac{1}{2}-3 \mu$.
 - *Tulipae* (Lib.) J. Lind. Developed on *Tulipa Gesneriana* shipped to Winnipeg from Toronto; not yet found on tulips grown in Manitoba.
 - *vulgaris* Fr. (probably only a form of *B. cinerea*). Injuring the tips of *Helianthus annuus*; Univ.
- Cephalosporium acremonium* Corda. Rather common in soil; isolated also from butter. Produces a pink to salmon-colored, rather slimy growth in culture, with spores $3-6 \times 1-2 \mu$. A fungus apparently this species was found on old Myxomycetes; Univ.

- Cephalosporium curtipes** Sacc. or near. In soil in Man.; in wheat roots at Indian Head, Sask. $4-9 \times 2-4 \mu$.
- **humicola** Oudem. Occasional in soil. Cultures somewhat paler than those of *C. acremonium*; spores roundish, $3-4 \times 2-3 \mu$.
- Cercoseptoria Lappulae** Dearness & Bisby (71: 123). On *Lappula echinata*; type collected at Birds Hill; found also at Univ. Spores $20-90 \times 4 \mu$.
- Cercospora althaeina** Sacc. Common in summer and autumn on *Althaea rosea*; Univ. $40-90 \times 4-6 \mu$.
- **antipus** Ell. & Holw. On *Lonicera glaucescens* and *L. Sullivantii*; Norway House, Berens River and Birds Hill. $25-40 \times 3\frac{1}{2}-4\frac{1}{2} \mu$.
- **Apii** Fres. Reported on *Apium graveolens* from Morden (Can. Plant Disease Survey Report for 1934) but specimens have not been seen by the writers.
- **arboreae** Tharp. On *Pseodera quinquefolia*; Univ., Brandon. Spores $40-60 \times 4-6 \mu$, conidiophores short. *C. Ampelopsidis* has wider spores and longer conidiophores (C. Chupp. in litt.). Tharp wrote the name "arboriae," but since it is derived from arborea (*Ampelopsis arborea*), it should be "arboreae" (I. L. Connors).
- **avicularis** Wint. Common on *Polygonum aviculare* and *P. erectum*; Univ. and across southern Manitoba. $40-100 \times 4-6 \mu$.
- **beticola** Sacc. Occasional on garden beet, *Beta vulgaris*, but not found to be injurious; Univ., Reston, Sifton. $60-90 \times 4-6 \mu$.
- **Bizzozzeriana** Sacc. & Berl. On *Lepidium Draba*, a weed which has recently become established in Manitoba; Brandon and Kaleida. Dr. Solheim thinks it is this species, or perhaps the var. *Drabae* S. Com. Spores $55-74 \times 4-5 \mu$, 2- to 4-septate.
- **Callae** Peck & G. W. Clinton. One collection on *Calla palustris*; Kenora. $55-66 \times 8-10 \mu$.
- **Caricis** Dearness & House (*Cercosporina Caricis* (Dearness & House) Sacc. On *Carex* sp.; Univ. *Cercospora Caricis* Oudem. was described earlier; Dr. Chupp is uncertain whether the latter is distinct from *C. Caricis* Dearness & House.
- **clavata** (Gerard) Peck. On *Asclepias syriaca*; Univ. $38-75 \times 4-6 \mu$. See *Phyllosticta cornuti*.
- **Comandrae** Ell. & Dearness. On *Comandra pallida*; Grand Beach. $45-56 \times 2-2\frac{1}{2} \mu$.
- **Davisi** Ell. & Ev. Occasional on *Melilotus alba*; Brandon, Valley River. $34-100 \times 3-6 \mu$.
- **dubia** (Riess) Wint. Rather common on *Chenopodium album*; Univ., Elie; on *Atriplex* sp.; Saskatoon, Sask. $40-70 \times 5-7 \mu$.
- **Haleniae** Chupp & Bisby, n. sp. Spots at first more or less circular and translucent, becoming brown and extending along the edge of the leaf, without definite margin; the very numerous minute black pustules are visible under a hand lens, amphigenous; the stromata consist mostly of only a few dark brown cells; fascicles usually not dense, consisting often of only 1-5 conidiophores; conidiophores pale olivaceous-brown to medium-brown, the longer ones being the darker, mostly short, non-septate, not geniculate, unbranched, without spore scars, somewhat attenuate toward the apex, $5-25 \times 3-5 \mu$, occasionally up to 75μ long; conidia hyaline, obclavate, or sometimes cylindrical when short, straight or slightly curved, base sharply conical to distinctly truncate, apex usually blunt, septa inconspicuous, $30-80 \times 3-3\frac{1}{2} \mu$.
- On leaves of *Halenia deflexa*; Berens River, Manitoba; August 1, 1935; G. R. Bisby 4921.
- Cercospora gentianicola* Ell. & Ev. has colored conidia; *C. Gentianae* Peck has colored, very narrow conidia; *C. Sabbatae* Ell. & Ev. and *C. Fraserae* Ell. & Ev. have conidiophores paler than those of *C. Haleniae*.
- **Heucherae** Ell. & Martin. On *Heuchera Richardsonii*; Brandon. Mature spores $65-90 \times 2-4 \mu$.
- **Lathyri** Dearness & House. On *Lathyrus venosus*; Minaki. $30-51 \times 4 \mu$.
- **Malvarum** Sacc. On *Malva rotundifolia*; Birds Hill. $60-100 \times 4-5 \mu$.
- **manitobana** J. J. Davis (Trans. Brit. Myc. Soc. 8: 96, 1922.) Type collected at Gilbert Plains, Man., on *Elaeagnus argentea*; collected subsequently at Killarney and Souris, Man., and at Indian Head and Duff, Sask. Spores $46-80 \mu$ long, mostly $5-7 \mu$ wide. Resembles *C. Vitis* (Lév.) Sacc. in having long conidiophores in coremium-like fascicles, but the color of the conidiophores is different, and the conidia are wider in *C. Vitis*. (C. Chupp in litt.).

- Cercospora Menispermii* Ell. & Holw. On *Menispermum canadense*; Univ. Spores up to $40-60 \times 5-6 \mu$. Overholts (Mycologia, 26: 502) finds them $18-52 \times 4-6 \mu$ in Pennsylvania.
- *monoica* Ell. & Holw. On *Amphicarpa monoica*; Univ. Spores narrow, linear, $60-85 \times 3\frac{1}{2}-4 \mu$; stromata large, dark.
- *Opuli* (Fuckel) v. Höhn. On *Viburnum Opulus*; Gilbert Plains, Man.; on *V. pauciflorum*; Lake Waskesiu, Sask. $35-50 \times 2\frac{1}{2}-4 \mu$. See *C. varia*.
- *Osmorrhizae* Ell. & Ev. On *Osmorrhiza longistylis*; Univ. $40-90 \times 4 \mu$.
- *passaloroides* Wint. On *Amorpha canescens*; Birds Hill. Spores clavate, usually 1-septate, $40-52 \times 6-8 \mu$. Not a typical *Cercospora*; may possibly be identical with *Cladosporium Amorphae* Thüm.
- *Rhamni* Fuckel. On *Rhamnus alnifolia*; Beulah. $62-100 \times 5-6 \mu$. Resembles *C. aeruginosa* Cooke, except in lacking the green color of the clusters of conidiophores.
- *?rhoina* Cooke & Ell. On *Rhus Toxicodendron*; Thunder Hill. Not mature and therefore doubtful.
- *rosicola* Pass. Very common and often injurious on wild roses, especially when cultivated in hedges; Man. and Sask.
- *rubigo* Cooke & Hark. On *Spiraea salicifolia*; Berens River, Minaki. $47-75 \times 3-4\frac{1}{2} \mu$. Dr. Solheim writes that this species should perhaps be excluded from *Cercospora*.
- *Sagittariae* Ell. & Kellerm. On *Sagittaria latifolia*; Victoria Beach, Winnipeg. $50-100 \times 6-7 \mu$.
- *salicina* Ell. & Ev. On *Salix* sp.; Clear Lake. $18-40 \times 3-5 \mu$.
- *squalidula* Peck. On *Clematis ligusticifolia*; Univ.; Indian Head, Sask. $35-88 \times 4-5 \mu$.
- *subsanguinea* Ell. & Ev. On *Matantheum canadense*; Berens River, Univ. $22-56 \times 3-5 \mu$. Not a typical *Cercospora*.
- *Symphoricarpi* Ell. & Ev. On *Symphoricarpos occidentalis*; Univ. and Carberry, Man., Chamberlain, Sask. $24-44 \times 5-6 \mu$.
- *Thermopsisidis* Earle. On *Thermopsis rhombifolia*; Chamberlain, Sask.; det. I. L. Connors; also at Swift Current, Sask. Apparently the first records for Canada.
- *umbrata* Ell. & Holw. On *Bidens frondosa*; Victoria Beach. Probably this species, but not in good fruit. Spores $55-100 \times 6 \mu$.
- *varia* Peck. On *Viburnum pubescens*; Univ., Man.; on *V. pauciflorum*; Clear Lake, Man., Indian Head, Sask. $38-80 \times 4-5 \mu$. This may be the same as *C. Opuli*.
- *Violae-tricoloris* Briosi & Cavara. On *Viola tricolor* (cult. Pansy); Univ. Perhaps identical with *C. Violae* Sacc.
- *zebrina* Pass. Common and sometimes injurious on *Trifolium hybridum* in Man. and Sask.; on *T. repens* in Man. $50-130 \times 3-5 \mu$.
- *Ziziae* Ell. & Ev. On *Zizia cordata*; Birds Hill. $52-118 \times 4-6 \mu$.
- Cercosporaella Apocyni* (Ell. & Kellerm.) Trel. On *Apocynum androsaemifolium* and *A. sibiricum*; Univ. to Berens River and Dauphin. $35-80 \times 4-6 \mu$.
- *cana* Sacc. On *Aster cordifolius*; Berens River; on *Solidago canadensis*; Univ. $30-100 \times 4-5 \mu$.
- *Gei* Dearness & Bisby (71: 124). On *Geum strictum*; Brandon, Killarney, Oakville and Univ. Spots small, mostly hypophyllous; spores $28-70 \times 2-3 \mu$. *Cylindrosporium Gei* Farl. (q.v.) agrees so closely that it seems to be the same species.
- *Nesliae* Dearness & Bisby (71: 125). Type collected at Foxwarren; rather common and sometimes injurious to the weed *Neslia paniculata* in western Manitoba; found by Dr. Henry to be common also in Alberta; an immature specimen, apparently this species, from Indian Head, Sask. $30-80 \times 2\frac{1}{2}-4 \mu$.
- *Pastinacae* Karst. On *Pastinaca sativa* escaped from cultivation; Brandon. $40-60 \times 2-4 \mu$.
- Cladosporium ?caducum* J. J. Davis. A doubtful specimen on *Betula alba* var. *papyrifera*; Univ. $14-16 \times 6 \mu$.
- *carophilum* Thüm. Reported on *Prunus* sp., cult.; Morden. Specimens not seen by the writers, but to be expected in plantations of plums such as those at Morden.
- *cucumerinum* Ell. & Arth. Often injurious to *Cucumis sativus* in greenhouses; Winnipeg.
- *?epimyces* Cooke. A *Cladosporium*, perhaps only *C. herbarum*, is not uncommon on old *Pleurotus*, *Russula*, etc., in Man.

- Cladosporium fulvum** Cooke. "Leaf-mold" is often injurious to *Lycopersicum esculentum* in greenhouses; Winnipeg.
- **graminum** Corda. The *Cladosporium* common on old stems of cereals and grasses is included in this species with uncertainty.
- **herbarum** (Pers.) Link. Everywhere on plant parts or remains, in soil, butter, as a laboratory contaminant, etc., in Man. and Sask. Certain other species of *Cladosporium* listed here are possibly forms of this variable species.
- **Paeoniae** Pass. Occasionally found on spots on leaves of *Paeonia officinalis*; Univ. $10-25 \times 6-8 \mu$.
- **?stercorarium** Corda. On rabbit dung; Univ. Spores somewhat rough, one- or two-celled, mostly $18-21 \times 7-9 \mu$.
- **subsessile** Ell. & Barthol. On *Populus balsamifera* and *P. tremuloides*; Univ. to Norway House; common sometimes on *P. tremuloides* in Sask. $13-25 \times 5-6 \mu$.
- Cladotrichum polysporum** Corda. One collection on old wood; Univ. A crust of dark hyphae bears spores $15-18 \times 10-11 \mu$, with evidences of the beginning of perithecia (probably *Chaetosphaeria fusca* Fuckel).
- Clasterosporium carpophilum** (Lév.) Aderh. (*Coryneum Beyerinckii* Oudem.). On twigs of *Prunus Besseyi*; Saskatoon, Sask.; of *Prunus* sp.; Pelly, Sask.
- Coniothecium betulinum** Corda. On twigs of *Betula*; Victoria Beach, Lake of the Woods. Black pustules arise from the twigs, bearing aggregations of spores, the individual cells of which are $4-6 \mu$ in diameter.
- **?effusum** Corda. On old wood; Univ. Spores in clumps, each one-, two-, three- or four-celled.
- Coremium cinereo-album** (Bonord.) Sacc. On rabbit dung in a damp chamber; Univ. Stalk cylindrical, bearing a gray-green head, the whole about 1 mm. high. Spores $3-5 \times 1\frac{1}{2}-2 \mu$, borne in chains on dichotomously branched sporophores.
- **?coprophilum** Berk. & Curt. On dung; Univ. Fruit bodies $\frac{3}{4}$ mm. tall, white; head oval, bearing spores $9-10 \times 4-5 \mu$, in chains.
- **?glaucum** Link var. **fimicola** March. On dung of field-mice; Univ. Spores $4-5 \times 3-4 \mu$, hyaline.
- Cylindrium aeruginosum** (Link) Lindau. Very common, at least along the Red River, in autumn on fallen leaves of *Quercus macrocarpa*. This species was not found recorded on oak in Seymour (15). It fits the description in Rabenhorst Krypt.-Flora. The spores are mostly $16-24 \times 2-3 \mu$, cylindrical, straight. The tufts on the leaves are yellow-green. *Polyscytium flavum* Sumstine (Mycologia, 6: 35) cannot be very different.
- **elongatum** Bonard. Rather common in October and November on fallen leaves of deciduous trees of the same season; tufts whitish, spores somewhat shorter than in *C. aeruginosum*. *Polyscytium sericeum* Sacc. may be the same thing.
- Cylindrocarpon candidum** (Link) Wollenw. Occasional in soil, determined with some doubt by C. D. Sherbakoff. Culture white, with cream-colored masses of spores $42-58 \times 5-6\frac{1}{2} \mu$.
- **candidum** var. **majus** Wollenw. Twenty-seven isolations from soil. Cultures somewhat darker than in the preceding; spores $50-64 \times 5-6 \mu$.
- **didymum** (Hartig) Wollenw. Not uncommon in cultivated soils. Spores mostly one-septate, $20-28 \times 3\frac{1}{2}-4\frac{1}{2} \mu$.
- **?heteronemum** (Berk. & Broome) Wollenw. Sixteen isolations from soil. Spores $16-20 \times 3-4 \mu$, one- or two-celled.
- **radicicola** Wollenw. (*C. macrosporum*). Apparently common in soil. $20-40 \times 5-7 \mu$.
- Cylindrocolla Urticae** (Pers.) Bonord., stage of *Calloria fusarioides*, g.v. Found once at Selkirk in early June on stems of *Laportea canadensis* of the preceding year. Spores mostly $10-14 \times 1\frac{1}{2}-2 \mu$.
- Dactylium dendroides** (Bull.) Fr., stage of *Hypomyces rosellus*, g.v. On *Cantharellus*, *Lenzites* and *Polyporus tomentosus* in eastern Manitoba; isolated once from forest soil. Cultures pink to purplish; spores $20-40 \times 9-12 \mu$.
- Dicoccum Psoraleae** Ell. & Barthol. On *Psoralea argophylla*; Brandon. A dark mold-like growth is produced on the leaves, with spores $18-30$ (40) $\times 8-10 \mu$, mostly one-septate, sometimes with two or even three septa, pale olivaceous, slightly roughened.

- Didymaria didyma** (Unger) Schroet. On *Anemone canadensis*; Morden, Black Island in Lake Winnipeg. Spores $16-28 \times 6-10 \mu$, two-celled, hyaline. One collection had also many microconidia about $2 \times 1 \mu$. Seymour (15) gives the authors as (Unger) Pound.
- Epicoccum nigrum** Link. Occasional in soil and roots of cereals in Man. and Sask. Spores spiny, $20-25 \mu$.
- **purpurascens** Ehrenb. In roots of *Triticum aestivum*; Indian Head, Sask.
- Exosporium Tiliae** Link. Abundant on dead branches of *Tilia americana* along the Red River. Spores up to $90 \times 15 \mu$.
- Fumago vagans** Pers. Common in damp seasons on honey-dew on leaves of various plants in Man.
- Fusarium*** **arthrosporioides** Sherb. Isolated once from discolored basal parts of *Avena sativa* in Man.; once from a peach from Ontario.
- **avenaceum** (Fr.) Sacc. In soil; on twigs of *Tilia americana* and *Eleagnus*; in basal parts of *Medicago sativa*, *Melilotus alba*, and *Caragana*; from rotted buds of *Dahlia*; from pink grains of *Avena sativa*; very commonly associated with basal parts of *Triticum aestivum*, *T. durum*, *Avena sativa*, *Hordeum vulgare*, and *Secale cereale* in Man.; from *Medicago sativa*; Indian Head, Sask.
- **avenaceum** var. **volutum** Wollenw. Isolated once from basal parts of *Triticum aestivum* from Pipestone, Man.
- **avenaceum** form 1 Wollenw. From stalk of *Zea Mays*; Saskatoon, Sask.; 1923 (det. Wollenweber, as *F. arcuatum*).
- **bulbigenum** Cooke & Massee. Isolated from butter; occasionally isolated from discolored basal parts of *Triticum aestivum*, *Avena sativa* and *Hordeum vulgare* in Man.; caused severe injury to bulbs of daffodil imported into Sask.
- **bulbigenum** var. **Lycopersici** (Brushi) Wollenw. A *Fusarium* wilt of *Lycopersicum esculentum* is occasionally found, but the fungus has not been definitely determined. However, the variety *Lycopersici* has been isolated occasionally from basal parts of *Triticum aestivum*, *Avena sativa*, and *Hordeum vulgare* in Man.
- **coeruleum** (Lib.) Sacc. A common cause of rot in tubers of *Solanum tuberosum* in storage; isolated once from soil in Man.; from wheat roots, Saskatoon, Sask.
- **conglutinans** Wollenw. var. **Callistephi** Beach. Destructive to *Callistephus chinensis*, except that the plants may escape during their first year in new soil. This wilt, together with aster yellows, has almost ended the cultivation of asters in Man. The aster varieties resistant to wilt have not yet solved the problem in Manitoba.
- **culmorum** (W. G. Smith) Sacc. Occasional in scabbed heads of *Triticum aestivum* in Man. and Sask.; this species and the variety *cereale* are frequently associated with foot rots of *Triticum* spp., *Avena sativa* and *Hordeum vulgare*, in basal parts of *Bromus inermis*, in head blight of *Briza maxima*, and in soil in which cereals have been grown, in Man.; not yet isolated from virgin soil. See Greaney and Machacek (190, 191, 223) and Simmonds (41).
- **culmorum** var. **cereale** (Cooke) Wollenw. Perhaps even more common and injurious in Man. than the preceding, from which it is not easily differentiated; in scabbed *Triticum aestivum*; Saskatoon, Sask.; 1925 (det. Wollenweber).
- **dimerum** Penzig. Three isolations from butter in Man., and a few from soil.
- **Equiseti** (Corda) Sacc. Occasionally isolated from soil; of very common occurrence in basal parts of *Triticum aestivum*, *Avena sativa*, *Hordeum vulgare*, *Secale cereale*; also in *Bromus inermis*; in "scabbed" heads of *Triticum*; in fruits of *Cucumis sativus* and *Lycopersicum esculentum*; in basal parts of *Lathyrus odoratus*, *Phaseolus vulgaris* and *Melilotus* sp.; across southern Manitoba; from roots of *Triticum*; Indian Head, Sask.
- **Equiseti** var. **bullatum** (Sherb.) Wollenw. In crown of *Triticum*; Belbeck, Sask.; 1925 (det. Wollenweber).
- **?graminearum** Schwabe. Not found by Dr. Gordon in extensive isolations from cereals; but apparently its perfect stage *Gibberella Saubinetii* (q.v.) has been isolated on old stalks of *Zea Mays* at Univ., so this *Fusarium* may occur, but if so, rarely, and not as an important pathogen.

* Dr. W. L. Gordon, of the Dominion Rust Research Laboratory, Winnipeg, has kindly supplied this comprehensive survey from his records of species and hosts of the difficult genus *Fusarium*. (See also p. 141).

- Fusarium ?lateritium** Nees. Identified previously from twigs of *Fraxinus pennsylvanica* and *Acer Negundo* in Man. But when isolations were made from other *Acer* twigs *F. sporotrichioides* was obtained. *F. lateritium* must therefore be considered very doubtfully present.
- **Lini** Bolley. Often injurious in fields of *Linum usitatissimum* in Man. and Sask. Resistant varieties of flax are now grown by many farmers.
- **merismoides** Corda. Recorded by Henry (as *F. Betae*; Minn. Tech. Bull. 22:18, 1924) from Brandon soil; a few cultures from soil also in 1936.
- **moniliforme** Sheldon. Not uncommon in soil and in butter in Man.; isolated once from *Triticum aestivum* affected with foot rot.
- **orthoceras** Appel & Wollenw. In roots of *Triticum aestivum*; Indian Head, Sask.
- **orthoceras** var. **longius** (Sherb.) Wollenw. From crown of *Triticum aestivum*; Wolseley, Sask.; 1925 (det. Wollenweber); in soil at Winnipeg, Man.
- **oxysporum** Schlecht. The commonest *Fusarium* in Manitoba soil, including virgin soil; isolated also from discolored basal parts of *Triticum aestivum*, *T. durum*, *Avena sativa*, *Hordeum vulgare*, and *Secale cereale* in Man.; from wheat roots, Indian Head, Sask.
- **oxysporum** form 1 Wollenw. In wilt of *Solanum tuberosum*. Common but not serious in Manitoba.
- **oxysporum** var. **aurantiacum** (Link) Wollenw. Occasional in soil; commonly isolated from discolored basal parts of *Triticum aestivum*, *Avena sativa*, and *Hordeum vulgare* in Man., and from wheat roots in Sask.
- **Poae** (Peck) Wollenw. In soil, including virgin soil; in basal parts of *Bromus inermis* and stems of *Cucumis sativus* and *Melilotus* sp.; rather common in "scab" of *Triticum aestivum* and in kernels with pink discoloration; in dead fly (*Musca domestica*) in Man. From roots of *Avena sativa*; Saskatoon, Sask.; 1922; det. H. W. Wollenweber.
- **reticulatum** Mont. Occasional in soil and in discolored basal parts of *Triticum aestivum* and *Hordeum vulgare* in Man.
- **reticulatum** var. **?Negundinis** (Sherb.) Wollenw. Suspected of being present in the common red stain of wood of *Acer Negundo* in Man., but not yet isolated.
- **sambucinum** Fuckel. Occasional in soil; isolated once from branch of *Acer Negundo*.
- **sambucinum** form 6 Wollenw. (*F. discolor sulphureum*). In soil in Man. Probably also a cause of rot of tubers of *Solanum tuberosum*, although it is now known that *F. trichothecioides* is the common cause. See Bisby (65) for zonation in cultures of this species.
- **Scirpi** Lamb. & Fautr. Rather common in soil; occasionally isolated from *Triticum durum* and *Hordeum vulgare* in Man.
- **Scirpi** var. **acuminatum** (Ell. & Ev.) Wollenw. Common in soil, especially surface soil of cultivated fields; on *Sagittaria latifolia*; in branches of *Acer Negundo*, old stalk of *Zea Mays* and basal parts of *Melilotus* sp.; occasionally from basal parts of cereals in Man.; from roots of *Triticum*; Indian Head, Sask.
- **Scirpi** var. **filiferum** (Preuss) Wollenw. Isolated twice from *Triticum aestivum* affected with foot rot, perhaps only an associated species; also in decayed fruit of *Lycopersicum esculentum* in Man.
- **Solani** (Martius p.p.) Appel & Wollenw. Identified by W. L. Gordon from "crown rot" of Caragana; Univ., Man., and Saskatoon, Sask.; also in basal parts of *Phaseolus vulgaris*, *Glycine max*, *Melilotus alba*, *Triticum aestivum* and *Hordeum vulgare* in Man.; from wheat stem (det. Wollenweber) and wheat roots; Saskatoon, Sask.
- **Solani** var. **Martii** (Appel & Wollenw.) Wollenw. Isolated from basal parts of *Lathyrus odoratus* and *Triticum aestivum* in Man. Probably this variety (or its form 2 Snyder) in root rot of *Pisum sativum*.
- **sporotrichioides** Sherb. Occasional in soil; in twig of *Acer Negundo*, where it is possibly parasitic; isolated from "scab" of *Triticum aestivum*, and from dead branches of *Populus* in Man.; in roots of wheat; Indian Head, Sask.
- **trichothecioides** Wollenw. Causes considerable rot of tubers of *Solanum tuberosum* in storage in Man.
- **vasinfectum** Atk. In cultivated soil, especially in grass sod and fields of *Medicago sativa* in Man.
- **vasinfectum** var. **lutulatum** (Sherb.) Wollenw. Common in surface soil, especially in gardens in Man.

- Fusarium vasinfectum** var. **zonatum** (Sherb.) Wollenw. One isolation from the soil of a wheat field in Man.
- Fusicladium dendriticum** (Wallr.) Fuckel, stage of *Venturia inaequalis*. Common but seldom injurious on *Pyrus baccata* and *Pyrus* spp. across southern Man. and at Indian Head, Sask. Relatively few apples are grown; spraying for apple scab has not been necessary. The *Venturia* stage has not been found.
- **depressum** (Berk. & Broome) Sacc. On leaves of *Sium cicutifolium*; Univ. Spores $36-44 \times 4-6 \mu$. Transferred to *Scolecotrichum* by Bubak. The following appear to be synonyms, *sic* Dearness: *Cercospora clavigera* Ell. & Ev., *Didymaria atropurpurea* Ell. & Dearn., and *Helminthosporium puccinioides* Peck & Clint.
- **radius** (Lib.) Lindr. (*Napicladium Tremulae* (Frank) Sacc.) stage of *Venturia Tremulae*. Common on *Populus tremuloides* throughout Manitoba and in the "Park belt" of Sask. The young shoots are killed and blackened, so that the disease resembles fire-blight on apple; spots are also found on full grown leaves. Spores $20-30 \times 5-8 \mu$.
- Geomyces vulgaris** Traaen. Several isolations from soil, especially of meadow-prairie, in Man.; from roots of *Triticum aestivum*; Indian Head, Sask. Spores small, roundish or pyriform, $3-4 \mu$, on much branched conidiophores resembling those of *Monosporium*.
- Geotrichum candidum** Link. Rarely isolated from soil in Man. The hyphae break up into spores $5-12 \times 3-4 \mu$, cylindrical with obtuse ends.
- Gliocladium atrum** Gilman & Abbott. Two isolations from soil in Man. Spores about $3 \times 2 \mu$; the fungus fits *Gliocladium* except that it is dark enough to be sought in the *Dematiaceae*.
- **catenulatum** Gilman & Abbott. Isolated from grass sod in Man. Colonies white then green; spores $5-8 \times 2\frac{1}{2}-3 \mu$.
- **?macropodium** March. On dung of blue goose from Rosser. Conidiophores branched; spores $8-14 \times 4-5 \mu$, in heads.
- **penicillioides** Corda. In soil. Merges into *G. roseum*; colonies cream colored.
- **roseum** (Link) Bainier. Common in soil in Man.; from roots of *Triticum aestivum*; Saskatoon, Sask. Cultures salmon-pink; spores $4-7 \times 2\frac{1}{2}-4 \mu$, in dense "heads."
- Glomerularia Corni** Peck. On leaves of *Cornus canadensis*; Berens River, Victoria Beach, Man.; Lake Waskesiu, Sask. Spores spherical, about 10μ , in "glomerules."
- **Lonicerae** (Peck) Dearness & House. On leaves of *Lonicera canadensis*; Birds Hill; somewhat injurious on a hedge of *L. tatarica*; Portage la Prairie. Spores globose, very rough, $10-12 \mu$. Perhaps a form of this fungus on *L. tatarica*, Univ., with smooth spores $7-10 \times 5-7 \mu$.
- Graphium stercorarium** March. On horse dung; Univ. Dark *Graphium* stalks arise, and numerous spores $5-10 \times 3-4 \mu$ are produced at the tip.
- Hadrotrichum lineare** Peck. On leaves of *Phragmites communis*; Cowan and Dauphin. Spots dark; spores $15-21 \times 6 \mu$, continuous.
- Haplographium bicolor** Grove. In surface soils and on old deciduous wood; Univ. Conidiophore brown, $5-6 \mu$ wide, branching at apex as illustrated by Bunting in Mason (10). See *Scopularia Populi*.
- **fuscipes** (Preuss) Sacc. Isolated from forest soil in Man. Like a *Penicillium*, except that the hyphae are brown.
- Harposporium Anguillulae** Lohde. In nematodes; Univ. The nematodes on a culture of horse dung were attacked, and hundreds were killed. The hyphae develop in the animals, and conidiophores protrude through the body wall and bear sickle-shaped conidia (see 71: 127).
- Helicoma Berkeleyi** Curt. On bark of *Populus*; Univ. Spores 4μ wide, in a flat spiral coil $20-28 \mu$ wide.
- **monilipes** Ell. & Johnson. On bark of fallen *Populus*; Univ.; Sept.; Irene Mounce and G. R. Bisby. Effused over the bark, macroscopically resembling an *Hypochnus*. Dr. Mounce found it to be a *Helicoma*, and sent it to Dr. Linder, who replied that it was *H. monilipes*, and that this is the first collection reported since 1893 when the type was collected in Michigan.
- **olivaceum** (Karst.) Linder. On bark of fallen *Populus*; Univ. Tufts brown; spores in coils $15-18 \mu$ wide. Det. Linder (Ann. Mo. Bot. Gard. 18: 11, 1931).

- Helicoon ellipticum** (Peck) Morg. On a decayed board; Univ. Spores forming upright coils $28-32 \times 14 \mu$. Determination verified by Linder (Ann. Mo. Bot. Gard. 18: 11, 1931).
- Heliomyces gracilis** Morgan. On bark of dead *Populus*; Univ. Tufts green; spores $60-80 \times 1-1\frac{1}{2} \mu$, coiled into a lax flat spiral.
- Helminthosporium Avenae** Eidam. On leaves of *Avena sativa*, Roblin, Man., and Yorkton, Sask.; of *Avena fatua*, Rouleau, Sask.; in crown of *Avena sativa*; Brandon, Man.
- **Bromi** Diedicke, stage of *Pyrenophora Bromi*, q.v. On leaves of *Bromus inermis*; throughout Man. and at Saskatoon, Sask. Brown spots appear on the leaves in early spring.
- **?fusiforme** Cooke. On decayed wood of *Quercus macrocarpa*; Univ. Spores $32-38 \times 8-10 \mu$.
- **geniculatum** Tracy & Earle. Common in Manitoba in crowns and roots of *Avena sativa*, *Hordeum vulgare*, *Secale cereale*, *Triticum aestivum* and *T. durum*; also from kernels of *T. aestivum*; three isolations from prairie soil. This species is perhaps better placed in Boedijn's genus *Curvularia*.
- **gramineum** Rabenh. Fairly common on *Hordeum vulgare* in experimental plots and on farms in Man. and Sask. Stripe disease has not been very common during recent dry years.
- **?macrocarpon** Grev. On branches of *Quercus macrocarpa*; Univ. Spores clavate, $90-120 \times 17-18 \mu$, about 8-celled.
- **?rhabdiferum** Berk. & Br. Identified with doubt from soil.
- **sativum** Pammel, King, & Bakke. Very common in crowns and roots, sometimes on leaves, heads, or kernels of *Avena sativa*, *Hordeum vulgare*, *Secale cereale*, *Triticum aestivum* and *T. durum* in Man. and Sask.; on leaves of *Elymus canadensis* and *Hordeum jubatum* in Man. Different isolations vary considerably in pathogenicity. Isolated four times from the A horizon of a virgin meadow-prairie soil, and seven times from soil in a wheat field. See Greaney and Machacek (190, 191, 223): they report a white saltant (189); see also Sallans (39).
- **teres** Sacc. Common on leaves of *Hordeum vulgare* in Man. and in the "Park belt" of Sask.; isolated from soil and from diseased kernels and root of *Triticum aestivum*, and from diseased roots of *Hordeum vulgare*, in Man.
- **?teretiusculum** Sacc. & Berl. On an old barrel stave in the woods, associated with *Pyrenophora rugosa*, q.v.; Univ. Spores c. $70 \times 10 \mu$.
- **tetramera** McKinney. Widespread but not abundant in crowns of *Triticum aestivum* and *T. durum* in Man.; one isolation from soil.
- **?torulosum** (Syd.) Ashby. A species morphologically resembling *H. torulosum* is found rarely in roots of cereals (J. E. Machacek).
- **Tritici-repentis** Diedicke. On leaves of *Elymus canadensis*; Carmen, Man.; on *Triticum aestivum*, Assiniboia, Sask., with *Pyrenophora Tritici-repentis* stage present; det. J. E. Machacek.
- sp. On *Bouteloua oligostachya*; Brandon. Associated with wilting and shrivelling of basal leaves. Spores obclavate, about 6-celled, $70-80 \times 10-12 \mu$. This is one of several species, apparently undescribed, now being studied by Dr. Machacek.
- Heterosporium ?Avenae** Oudem. On leaves of *Hordeum vulgare*; Univ. Spores rough, $18-28 \times 9-11 \mu$, becoming 2-celled, rarely 3-celled. Although associated with "false-stripe" of barley, this fungus is evidently not the cause of the disease. Mr. B. Peturson has made many isolations from affected leaves without obtaining this fungus or any other consistently, and the trouble appears to be "physiological."
- **echinulatum** (Berk.) Cooke. On *Dianthus* sp.; Saskatoon, Sask.
- **gracile** (Wallr.) Sacc., stage of *Didymellina Iridis*, q.v. Often injurious on cultivated *Iris* across Man. and in Sask. An examination of the *Iris* garden at the Morden Exp. Station in Sept. 1927 showed the following "species" infected: *I. flavesces*, *I. florentina*, *I. pallida dalmatica*, *I. pumila*, *I. sambucina*. The following were free from infection: *I. arenaria*, *I. cristata*, *I. graminea*, *I. longipetala*, *I. laurata*, *I. Pseudacorus*, *I. ruthenica*, *I. setosa*, *I. sibirica*, *I. spuria* and *I. versicolor*. Mains (Proc. Indiana Acad. Sci. 38: 93-102, 1929) reports similar observations in Indiana.
- **maculatum** Klotzsch. On dead leaves of *Typha latifolia*; Univ.; Mar. Spores slightly rough, 1- to 4-celled, up to $28 \times 9 \mu$ long (see Overholts, Mycologia, 21: 274).
- **Phlei** C. T. Gregory. On *Phleum pratense*; Univ., Man. and Indian Head, Sask. Small spots are produced on the leaves of timothy, and a few echinulate spores were found.

- Hormiactis ?alba** Preuss. On bark of *Populus*; Univ.; July. White tufts are produced on the bark; the conidia are borne in chains, 2-celled, hyaline, $14-18 \times 6-8 \mu$. Size of spores was not stated by Preuss.
- Hormiscium antiquum** (Corda) Sacc. On twigs of *Fraxinus pennsylvanica*; Univ. The twigs are covered with a smudge of blackish mycelium and spores; the spores are made up of cells $8 \times 6-8 \mu$, adhering in indefinite chains.
- Hormodendron viride** (Fresen.) Sacc. Occasional in soil. Other species of *Hormodendron* are also present in soil.
- Hyalopus ater** Corda. One isolation from soil in Man. was determined by E. W. Mason to belong to this "group."
- **?ochraceus** Corda. On old bark of *Populus*; Univ. Small golden tufts with conidiophores $45-60 \times 15 \mu$, non-septate, bearing at the apex pedicels about $15 \times 5 \mu$, which may remain attached to the spore; spores golden-orange, non-septate, $40-50 \times 20-25 \mu$. Material rather scanty.
- Illosporium ?roseum** (Schreb.) Martius. On the lichen *Peltigera canina*; Gimli. Salmon-pink dense spots of the fungus bear rough globular spores $6-8 \mu$ wide.
- Lemonniera aquatica** de Wild. In the water in a small slough; Univ.; Oct. 30, 1933; det. C. W. Lowe. The spores were free in the water: they are stellate, as illustrated by de Wildeman. See *Tetracladium*.
- Leucodochium** sp. On decayed deciduous wood; Univ. Sporodochia white, $75-100 \mu$, wide; conidiophores fasciculate, $30-35 \times 1 \mu$; conidia bacillar, c. $3 \times \frac{1}{2} \mu$.
- Macrosporium Saponariae** Peck. On leaves of *Saponaria Vaccaria*; Univ. Spores $50-70 \times 14-16 \mu$. This is probably an *Alternaria*.
- Mesobotrys simplex** Gilman & Abbott. Rare in soil in Man. The fungus is as described and illustrated (Iowa State College J. Sci. 1: 319, 1927) except that the whorls are more regular, and the branches seldom exceed 30μ in length. The spores are $3\frac{1}{2}-5\frac{1}{2} \times 3-3\frac{1}{2} \mu$.
- Metarrhizium** sp. Twenty-eight isolations from soil of a wheat field; in roots of *Triticum aestivum* in Man. and Sask. In culture the mycelium is white at first, later bearing dark olive-green areas of spores. Conidiophores elongated and slender, penicillate; spores $5-8 \times 2\frac{1}{2}-3 \mu$. Not in Thom, "The Penicillia."
- Microstroma Juglandis** (Bereng.) Sacc. On leaves of *Juglans nigra*; Morden. In "The Fungi of Manitoba" reasons are given for placing this fungus in the Moniliales. The host does not withstand the Manitoban climate.
- Monilia Amelanchieris** Reade. On fruits of *Amelanchier alnifolia* in Man. and probably in Alberta and Sask. Spores $14-16 \times 10-15 \mu$, in loose chains. This fungus was described (Ann. Myc. 6: 114) on *A. canadensis* in New York with spores $14-23 \times 10-14 \mu$. Honey (Am. J. Botan. 23: 100) reports apothecia.
- **aurea** Gmelin. On decayed wood; Clear Lake. Specimen in Dearness herbarium only.
- **fimicola** Cost. & Matr. Injurious in a bed of *Psalliotia campestris* at Fort William, Ont.; reported by an observant grower near Univ., Man., who had some difficulty getting rid of it. "Plaster-mold" describes the appearance well.
- **geophila** Oudem. Isolated from roots of *Triticum aestivum*; Indian Head, Sask. Fungus in culture golden-yellow; spores in chains, $3-4 \times 2 \mu$. A fungus appearing identical in appearance was isolated from soil in Man., but the spores were $6-10 \times 4-6 \mu$.
- **implicata** Gilman & Abbott. Isolated from soil in Man.; from roots of *Triticum aestivum*; Indian Head, Sask.
- **sitophila** (Mont.) Sacc. Occasional as a laboratory "weed," rare in soil and butter in Man. Easily recognized by its rapid growth and salmon spores. The *Neurospora* stage has not been observed.
- Monotospora Daleae** Mason (10: 50; *Mycogone nigra* Jensen: see 76, 78). Thirty-three isolations from soil of grass land or wheat fields in Man., but not found in other soils; from roots of *Triticum aestivum*; Indian Head, Sask. Described and illustrated by Mason (10).
- **lanuginosa** (Griffon & Maubl.) Mason (10: 59). From wheat kernels in an oven; Saskatoon; isolated by P. M. Simmonds; det. E. W. Mason. Dr. Simmonds kept his cultures at 55°C . It seemed possible that such a thermophilic fungus might thrive in "heating" plant material: it was found that it is easily obtained by taking grass from the centre of a pile of mown lawn grass, and placing it on agar held at 50°C ; Univ., Man.

- Mycoderma* spp. Very common in milk and butter.
- Mycogone cervina* Ditm. On some mushroom in the woods; Univ., Man.; on *Psalliota campestris*; Saskatoon, Sask.
- *ochracea* Boudier. On *Helvella*; Univ. A brown growth on the distorted host bears spores with a brownish rough upper cell 15–18 μ wide, and a small hyaline lower cell.
- Myriocoon comitatum* J. J. Davis, probably a microconidial stage of *Sclerotium bifrons*, q.v. On leaves of *Populus tremuloides* infected with *S. bifrons*; Lake Winnipeg at 51° 30' N. Spores 2–3 μ , roundish.
- Napicladium arundinaceum* (Corda) Sacc. On leaves of *Phragmites communis*; near Dauphin, Man., and at Emma Lake and Prince Albert, Sask. Blackish spots are present on the leaves; spores 3-celled, pale brown, 40–48 \times 12–15 μ .
- Nigrospora sphaerica* (Sacc.) Mason. Sometimes apparently injurious to ears of *Zea Mays* in field or storage; Univ. Mr. M. I. Timonin made a special study of this fungus in 1932, which may be summarized as follows: it is to be found on overwintered stems of *Bromus inermis*, in living heads, and especially inside the stems of the *Bromus* affected by a stem maggot; in stems of *Triticum aestivum* killed by wheat stem maggot; on head of *Agropyron tenerum*; on leaves of *Lycopersicum esculentum* affected with insects. It would appear that the fungus may be introduced by the insect inside grass stems. The spores are spherical, 14–20 μ , dark-brown; the uninitiated think they are smut spores. Mason (10: 61) examined Manitoban specimens which make somewhat doubtful the distinction between this species and *N. Oryzae* (*Basisporum gallarum* Moll.).
- Oedocephalum ?beticola* Oudem. On old paper in a damp chamber; Univ. Conidiophore 8 μ wide, septate, enlarged at apex to a globe 30 μ wide; spores borne on sterigmata on this globe, 6–8 \times 3–4 μ , hyaline, somewhat rough.
- *glomerulosum* (Bull.) Sacc. On old stem of *Helianthus annuus*, and (with *Humarina testacea*) on decaying roots of *Medicago sativa*; Univ. Conidiophore erect, septate, about 10 μ wide; apex a globe 30–40 μ wide; spores 16–20 \times 9–12 μ .
- *?hyalinum* (Bonord.) Sacc. On old deciduous wood; Univ. Spores globose, c. 4 μ , slightly rough.
- Oospora lactis* (Fresen.) Sacc. Abundant in dairy products. *O. lactis* is perhaps a *Geotrichum*.
- Ophiocladium ?Hordei* Cav. On *Phalaris* sp.; Indian Head, Sask., 1935; det. I. L. Conners; specimen at Ottawa. Spores 12–15 \times 7½–9 μ (Cavara gives 6–8 \times 4½ μ); otherwise the fungus seems to agree with *O. Hordei*.
- Ovularia avicularis* Peck, possibly the same as *O. Bistortae* (Fuckel) Sacc. On *Polygonum erectum*; Univ., Man.; on *Polygonum* sp.; St. Gregor, Sask. Spots round or irregular; spores 10–18 \times 6–7½ μ .
- *Carletoni* Ell. & Kellerm. On *Lactuca pulchella*; near Virden, Man. and at Indian Head, Sask. The leaves look as if they bore a downy-mildew in spots; spores 15–20 \times 7–10 μ .
- *destructiva* (Phill. & Plowr.) Massee. On *Myrica gale*; Kenora and Minaki; Sept. Spots roundish, brown; spores 20–24 \times 7–9 μ .
- Ozonium auricomum* Link, a mycelial phase of *Coprinus domesticus*. The "golden hair" is common in woods. See Buller (82, vol. III: 38).
- Pachybasium pyramidale* (Bonord.) Oudem. Encrusting crowns of grass; Univ.; this may be the fungus found on charred wood of *Pinus Banksiana*; Vivian. Crust yellowish-brown; conidiophores with verticils of short branches bearing spores; spores 4–6 μ , globular, hyaline.
- Paecilomyces aureocinnamomeum* (Biourge) Thom. One isolation from butter; det. C. Thom.
- *Varioti* Bainier (*Penicillium divaricatum* Thom). Common in butter, rare in soil.
- Papularia sphaerosperma* (Pers.) v. Höhn. (*Coniosporium Arundinis* Sacc.). On old stems of *Phragmites communis*; Delta; a few isolations from soil in Man.; on bamboo stakes; Saskatoon, Sask. Known by its lenticular spores mostly 5–7 μ wide when flat, brown with a hyaline rim. See Mason (10: 16).
- Pedilospora parasitans* v. Höhn. On decayed deciduous wood; Univ.; det. D. H. Linder. A fine fungus with spores shaped like horse-shoes, about 5-celled, 13–16 \times 7–9 μ , hyaline but pinkish in mass on the wood.

- Penicillium* ?*albidum* Sopp. One isolation from soil. All species of *Penicillium* included here were first determined by Thom. His book, "The *Penicillia*" gives descriptions (see also 76 and 78 for notes on Manitoban collections).
- *atramentosum* Thom. Rare in butter.
 - *aurantiobrunneum* Dierckx. Rare in soil and butter.
 - *braziliense* Thom. Occasional in soil. Chalky-white in culture, with a tinge of pink.
 - *brevicompactum* Dierckx. Occasional in butter.
 - *canescens* Sopp. In soil.
 - *carminoviolaceum* Dierckx. Common in soil. Beautiful shades of red and violet in Czapek's agar.
 - *chrysogenum* Thom. Very common in soil, especially cultivated soil, and in butter.
 - ?*citreosulfuratum* Biourge. Isolated from flour by M. Timonin.
 - ?*cyclopium* Westling. Rare in butter.
 - ?*Dierckxii* Biourge. In a forest soil.
 - ?*Duclauxi* Delacr. In soil of a wheat field.
 - *expansum* Link emend. Thom. Once from peat; presumably this species in rotting apples in Man. and Sask.
 - *flavidorsum* Biourge. Obtained deep in peat.
 - *frequentans* Westl. Occasional in soil.
 - *funiculosum* Thom. Eleven cultures from soil.
 - ?*fuscum* Sopp. In a forest soil.
 - *Gladioli* McCulloch & Thom. Common and often injurious on corms of *Gladiolus* sp. in storage; Winnipeg. Known by the abundant tan-colored sclerotia.
 - *griseoroseum* Dierckx. In soil; near *P. chrysogenum*.
 - ?*griseum* Sopp. In butter.
 - *guttulosum* Abbott. Common in forest soils, especially in lower horizons.
 - *Herquei* Bainier & Sart. A species in meadow soils belongs to this "series."
 - *implicatum* Biourge. A variety of this species in butter.
 - *intricatum* Thom. No less than 417 isolations from soil, especially surface soil, were placed in this species after a couple of cultures had been so determined by Thom. Not common in forest soils. Certainly this funiculose type of *Penicillium*, with a grayish brown growth at first without spores, then becoming smoky-greenish as spores develop, is very common in the soil. Over and over again the same type of growth and colors would appear; but also there would be many forms "intergrading" to *P. Thomi* or even *P. janthinellum*. After examining more than 2,500 cultures of *Penicillium* from the soil, one feels that there is an almost endless number of forms in this genus; many of these forms have been classified as "species."
 - *janthinellum* Biourge. Almost 400 isolations from soil were placed in this species, known to be a soil-inhabiting species.
 - *Johannioli* Zaleski. In butter.
 - *Kapuscinskii* Zaleski. In soil.
 - *lanosum* Westling. In butter.
 - *lilacinum* Thom. In soil, especially of meadow-prairie; isolated from roots of *Triticum aestivum* at Saskatoon, Sask. A considerable range of forms is included in this species, characterized by a lilac surface growth; reverse on Czapek's agar usually yellow. *Spicaria violacea* Abbott is a striking form with pointed Isaria-like columns.
 - *luteum* Zukal. In a garden soil. Emmons (*Mycologia*, 27: 141) used the isolation from Manitoba in his study of ascocarps.
 - *Martensii* Biourge. An isolation from butter.
 - *nigricans* Bainier in Thom. In a forest soil.
 - *oxalicum* Currie & Thom. In butter.
 - ?*palitans* Westling. Deep in peat.
 - *purpuregenum* Stoll. Occasional in soil and butter.
 - *purpurrescens* Sopp. In soil and butter.
 - *restrictum* Gilman & Abbott. Rather common in soil; one isolation from butter; from wheat roots; Indian Head, Sask. Known by its restricted growth and dark surface.
 - *Roqueforti* Thom. Occasional in butter; also introduced with Roquefort cheese.

- Penicillium rugulosum* Thom. Common in soil, including peat; also in butter.
- *rugulosum* var. *atricola* (Bainier?) Thom. Rare in soil.
 - *sanguineum* Sopp. In butter.
 - *simplicissimum* (Oudem.) Thom. In soil, especially surface horizon of forest.
 - *spinulosum* Thom. Not common in soil and butter.
 - *?sublateritium* Biourge. From peat at depth.
 - *tardum* Thom. From a forest soil.
 - *?Terlikowskii* Zaleski. Deep in peat.
 - *terrestre* Jensen. More than 300 isolations from soil, especially soil cropped with wheat; from roots of cereals; common in butter in Man. Rather variable; scores of isolations had a banana-like odor; others none.
 - *Thomi* Zaleski. Fairly common in forest soil and peat. Near *P. intricatum*.
 - *Thomii* Maire. Common in forest soil; also in other soils; on glumes of *Triticum aestivum*; in roots of cereals. Known by the dense masses of yellowish, pinkish or brownish sclerotia produced in culture.
 - *variabile* Sopp. Not common in soil.
 - *?verrucosum* Dierckx. Isolated by M. I. Timonin from flour.
 - *viridicatum* Westling. Not common in soil and butter.
- Piricularia grisea* (Cooke) Sacc. On leaves of *Setaria viridis* and *Holcus sudanensis*; Neepawa and Univ.
- Polyscytalum sericeum* Sacc. On fallen leaves; Univ. Spores $10-16 \times 3 \mu$. Perhaps the same as *Cylindrium elongatum*.
- Polyspora Lini* Pethybridge. On *Linum usitatissimum*; Saskatoon and Watson, Sask. This fungus is reported also in Alberta, but has not been collected in Man.
- Polythrincium Trifolii* Kunze, stage of *Cymadothea* (*Dothidella*) *Trifolii*. Common on leaves of *Trifolium hybridum* and *T. repens* across Man., north to The Pas, and in Sask.
- Ramularia Actaeae* Ell. & Holw. On leaves of *Actaea alba*, *A. rubra*, and *A. rubra* var. *neglecta*; Clear Lake, Eden and Norway House, Man.; on *Actaea* sp.; Lake Waskesiu, Sask. $20-30 \times 4-6 \mu$.
- *anomala* Peck. On leaves of *Polygonum Muhlenbergii*; Univ. Agrees with co-type specimens from Nebraska. Spores narrow, $10-16 \times 1\frac{1}{2}-2 \mu$.
 - *Armoraciae* Fuckel. On leaves of *Radicula Armoracia* (*Armoracia rusticana*); Kenora, across Man., and at Saskatoon, Sask. $16-26 \times 2-3 \mu$.
 - *arvensis* Sacc. On leaves of *Potentilla anserina* and *P. monspeliensis*; throughout Man. Tufts epiphyllous or sometimes amphigenous; spores $16-32 \times 3-4 \mu$.
 - *Asteris* (Phill. & Plowr.) Bubak. On leaves of *Aster ?novae-angliae*; Clear Lake. Conidiophores fasciculate; spores $18-36 \times 4-5 \mu$.
 - *Celastri* Ell. & Martin. On leaves of *Celastrus scandens*; Univ. $19-23 \times 4 \mu$.
 - *cercosporoides* Ell. & Ev. On leaves of *Epilobium angustifolium*; Foxwarren, Norway House and Vista. $18-30 \times 4-5 \mu$.
 - *cilinodis* J. J. Davis. On leaves of *Polygonum cilinode*; Minaki and Pointe du Bois; det. J. J. Davis. $20-25 \times 3 \mu$.
 - *coccinea* Dearness & Bisby (71: 129; not *R. coccinea* (Fuckel) Vestergren, 1902). On leaves of *Castilleja coccinea*; near Roblin. No further collections of this fungus have been made. It appears to be different from *R. Castillejae* Ell. & Ev. Spots reddish-gray, irregular; conidiophores amphigenous in dense tufts; spores $10-50 \times 4-6 \mu$, mostly about 30μ long and 2-celled.
 - *decipiens* Ell. & Ev. On leaves of *Rumex crispus* and *R. venosus*; Dauphin, Oakville and Sifton. $16-36 \times 3-4 \mu$.
 - *Gei* (Eliass.) Lindroth. On leaves of *Geum triflorum*; Brandon. Spots grayish brown with purple margin; spores $20-30 \times 2-3 \mu$.
 - *Heraclei* (Oudem.) Sacc. On leaves of *Heracleum lanatum*; Dauphin, Lydiatt and Univ., Man.; Indian Head, Sask. $23-33 \times 4-5 \mu$.
 - *Impatiensis* Peck. On leaves of *Impatiens ?biflora*; Berens River. Spores clustered, non-septate, $18-22 \times 4-5 \mu$.
 - *ionophila* J. J. Davis. On leaves of *Viola canadensis*; Dropmore, Man., Indian Head and Lake Waskesiu, Sask.; on *V. Nuttallii*; Indian Head, Sask. Spores $21-33 \times 4-5 (6) \mu$, mostly 2-celled, sometimes 3- or even 4-celled.

- Ramularia Lappulae** J. J. Davis. On leaves of *Lappula deflexa*; Treesbank, Univ. 14-22 $\times 4 \mu$.
- **Lysimachiae** Thüm. On leaves of *Steironema ciliatum*; Univ. Probably this species, but not in good fruit.
- **?Magnusiana** (Sacc.) Lindau. On leaves of *Trientalis americana* (T. ?*borealis*); Berens River. 20-26 $\times 4 \mu$.
- **?menthicola** Sacc. On leaves of *Mentha glabrior*; Victoria Beach. 14-36 $\times 2-3 \mu$.
- **Pastinacae** (Karst.) Lindr. & Vestergren. On leaves of *Pastinaca sativa*; Winnipeg. 22-32 $\times 3 \mu$.
- **punctiformis** (Schlecht.) v. Höhn. On leaves of *Epilobium adenocaulon*; Duck Mountain and Victoria Beach. Spores c. 30 $\times 3 \mu$.
- **rosea** Fuckel. On leaves of *Salix* sp.; Univ. and Vista, Man.; Indian Head, Sask. 15-21 $\times 3-5 \mu$.
- **Rudbeckiae** Peck. On leaves of *Rudbeckia laciniata*; Beausejour to Dauphin. 30-47 $\times 3-5 \mu$.
- **rufomaculans** Peck. Common on leaves of *Polygonum erectum* and *P. Muhlenbergii*; Univ. to Valley River. Spores 10-20 $\times 2-5 \mu$. Perhaps better placed as *Septocylindrium rufomaculans* (Peck) Pound & Clements.
- **sepium** Dearness & Bisby (71:130). On leaves of *Convolvulus sepium*; Minaki. Spots roundish-angular; spores mostly 15-25 $\times 3-4 \mu$. A *Septoria* also is present.
- **subrufa** Ell. & Holw. On leaves of *Smilax herbacea*; Univ. Spots reddish above; spores hypophyllous, 20-25 $\times 3-4\frac{1}{2} \mu$.
- **Tanacetii** J. Lind. On leaves of *Tanacetum vulgare*; Univ. Spots brownish; spores large, 28-50 $\times 4-5 \mu$, commonly 2-celled, rarely 4-celled.
- **Taraxaci** Karst. Common on *Taraxacum officinale* in Man.
- **Tulasnei** Sacc., stage of *Mycosphaerella Fragariae*. Common and somewhat injurious on cultivated and native species of *Fragaria* in Man. and Sask., including *F. glauca* in Sask. Spores 14-45 $\times 2-4 \mu$. Perfect stage not yet found.
- **umbrina** J. J. Davis. On leaves of *Diervilla Lonicera*; Ingolf. Spots umber, roundish; spores hypophyllous, 8-16 $\times 2-3 \mu$, 1- or 2-celled.
- **Urticae** Ces. On leaves of *Laportea canadensis* and *Urtica gracilis*; Dauphin, Univ. Spores 10-28 $\times 2\frac{1}{2}-4 \mu$, commonly 2-celled.
- **variata** J. J. Davis. On leaves of *Mentha arvensis* var. *canadensis*; Univ. Spots small, brownish becoming almost black; spores 28-40 $\times 3-3\frac{1}{2} \mu$. *R. menthicola* is recorded on whitish spots.
- **variegata** Ell. & Holw. On leaves of *Petasites palmatus*; Victoria Beach. Spores 16-25 $\times 3-4 \mu$, commonly 2-celled.
- **Viburni** Ell. & Ev. On leaves of *Viburnum Opulus*; Gilbert Plains. 23-36 $\times 2\frac{1}{2}-3 \mu$.
- **Virgaureae** Thüm. On leaves of *Solidago gilvocanescens* and *S. hispida*; Berens River, Univ., Winnipeg Beach. Spores commonly 20-30 $\times 3-4 \mu$, but sometimes up to 100 μ long. This fungus has been placed in *Cercospora* and *Cercospora*, but Chupp (in litt.) leaves it in *Ramularia*.
- Rhinotrichum ?griseum** Sacc. On old deciduous wood; Univ. A gray, effused growth bears septate conidiophores with conidia arising from sterigmata along the apical portions; spores lemon-shaped, 13-16 $\times 10-12 \mu$. Scarcely Saccardo's species, which was described on a rust; but the spores are similar.
- **Noblesiae** Sumstine (Mycologia, 29:250). Growing over boards on the wall of an ice-house; Univ. It looks like *Hypochnus* or *Coniophora*, and is yellow-brown in color. It may be an imperfect stage of a *Basidiomycete*. Attempts by Drs. Mounce and Nobles to obtain cultures were unsuccessful.
- Rhizoctonia Crocorum** (Pers.) DC. stage of *Helicobasidium purpureum* (Tul.) Pat. On tubers of *Solanum tuberosum*; Prince Albert, Sask.; coll. J. W. Marritt. Known also in Alberta. The perfect stage has not been seen.
- **Solani** Kühn, stage of *Corticium Solani*, q.v. Common and often injurious on tubers, stems and stolons of *Solanum tuberosum* throughout Man. and Sask.; in soil in Man., and in or on diseased roots of many plants including *Brassica oleracea* var. *capitata*, *B. Napobrassica*, *Delphinium*, *Iberis*, *Lathyrus odoratus*, *Lycopersicum esculentum*, *Sonchus arvensis*, and

- Taraxacum officinale*; also on roots of cereals. *R. Solani* was found by Vanterpool (53) to be the main cause of early damping-off of flax in Sask. Protoplasmic streaming discussed by Buller (82, vol. V).
- Rhopalomyces ?elegans** Corda. On herbaceous stems and an old wasp's nest; Univ. Resembles *Oedocephalum*, but the spores are dark. A brown conidiophore arises about 1 mm. high, 15 mm. wide, septa not seen; it swells at the apex to a globe 75 μ wide, covered with sterigmata bearing spores 55–60 \times 23–25 μ , brown, paler near the base but dark brown at the hilum. These spores have the length of *R. elegans* but the width of *R. macrosporus*.
- Rhynchosporium Alismatis** (Oudem.) J. J. Davis. On leaves of *Alisma Plantago-aquatica* and *Sagittaria latifolia*; Birds Hills, Boissevain and Univ. Spores 14–20 \times 3–4 μ , hyaline, 2-celled.
- **Secalis** (Oudem.) J. J. Davis. On leaves of *Hordeum jubatum*; Storthoaks, Sask.; of *H. vulgare*; Indian Head, Saskatoon and Scott, Sask.; of *Phalaris arundinacea*; Indian Head, Sask. Davis (Trans. Wis. Acad. Sci. 20: 420, 1922) discusses this and the preceding species.
- Sclerotium bifrons** Ell. & Ev. On leaves of *Populus balsamifera* and *P. tremuloides*; Victoria Beach and Bull Head, Lake Winnipeg. First found in 1931: it almost certainly does not occur in the extensive poplar groves near the University.
- **compactum** Tode, stage of a Typhula. On fallen leaves of *Populus*, etc.; Univ. The dark reddish sclerotia are compact, lenticular, and are to be seen on the damp leaves after the snow goes in April.
- **?deciduum** J. J. Davis. Common on old stems of herbs such as *Althaea* and *Sonchus arvensis*; Univ.; April to early June. The yellow-orange sclerotia are at first embedded in the cortex of the dead stems.
- **Delphinii** Welsh. Sometimes injurious to cultivated Delphinium; Univ. and Winnipeg.
- **Gladioli** Massey, stage of *Sclerotinia Gladioli* Drayton. On corms of *Gladiolus* shipped into Winnipeg; not found established as yet.
- **lichenicola** Svendsen. In tufts of *Cladonia ?rangiferina*; Victoria Beach; May. Sclerotia golden-yellow, somewhat of the consistency of cheese.
- **?Muscorum** Pers. In moss; eastern Man.; Sept. Sclerotia irregular, firm, golden-yellow to orange, cellular within when viewed under the microscope.
- Scolecotrichum Clavarium** (Desm.) Sacc., stage of *Helminthosphaeria Clavarium*, q.v. On *Clavaria cristata*; Kenora; Sept.-Oct. The *Clavaria* is blackened with a dense growth of the parasite; conidia 16–26 \times 6–8 μ , brown, 2-celled.
- **graminis** Fuckel. On leaves of *Agropyron repens*, *Hordeum jubatum* and *Phleum pratense* across southern Man.; on *Agropyron tenerum*, *Hordeum jubatum* and *H. vulgare*; Chamberlain, Kelliher, Rama, Scott and Saskatoon, Sask. The leaves turn brown; spores 32–44 \times 8–12 μ , 2-celled, brown.
- Scopularia Populi** Dearness & Bisby (71: 130). On bark of dead *Populus*; Univ. A brownish-black mold occurs on the bark; conidiophores erect, septate, brown, 500–600 μ long, 8–9 μ wide at base, 4–5 μ below the penicillate head; spores 3–4 \times 2 μ , held together by mucus. This fungus is near to, or possibly identical with, *Haplographium bicolor* Grove (see 10: 62).
- Scopulariopsis brevicaulis** (Sacc.) Bainier. Occasional in soil; identified by M. Timonin in grasshoppers (*?Melanoplus bivittatus*) from western Man.; very abundant on moldy hay and ensilage. Moldy sweet clover (*Melilotus officinalis* and *M. alba*) has been held responsible for the death of scores of cattle in Manitoba. The predominant mold present is usually *S. brevicaulis*; but as Brown, Savage and Robinson (81) point out, this fungus is evidently not the cause of the illness.
- **rufulus** Bainier. Isolated from a surface soil. Colonies coffee-brown; spores 5–7 \times 5 μ , slightly rough.
- Sepedonium chrysospermum** Fr. Common on *Boletus* spp., occasional on Agaricaceae; Univ. north and eastward. The fungus produces a golden growth on the hosts, usually after they have discharged their spores. The *Sepedonium* spores are globular, rough, up to 22 μ in diameter. *S. chrysospermum* is a stage of *Hypomyces chrysospermus* (Bull.) Tul.; which has not been collected in Man., nor did infected *Boleti* develop it in a damp chamber.
- **niveum** Massee & Salmon. On rabbit pellets; Univ. Tufts white; spores 14–28 μ , spherical, somewhat rough, arising from short sterigmata on the hyphae.

- Septocylindrium concomitans** (Ell. & Holw.) Halsted. On leaves of *Bidens cernua*, *B. frondosa* and *B. vulgata*; Birds Hill, Brandon, Univ. Spores $20-27 \times 4-6 \mu$, usually 2-celled, catenulate.
- Septomyxa affinis** (Sherb.) Wollenw. Fairly common in soil and butter. Cultures produce a pale salmon-colored slimy growth, and abundant spores, commonly 2-celled. This is the fungus previously reported from Man. as *Hymenula affinis*.
- Speira toruloides** Corda. On stubble of *Triticum aestivum*; Nov. 17, 1924; on a wooden greenhouse label which had been in a pot of cereals, then washed and left on a greenhouse bench to dry; April 20, 1928; both collections by R. C. Russell at Saskatoon, Sask. The fungus arises as little tufts of spores, without evident mycelium; spores $35-54 \times 20-25 \mu$, brown, palette shaped, composed of 40-50 or more cells. They are exactly as illustrated by Mangin (Bull. Soc. Myc. France, 15, Pl. 11). Mangin thought the species might be *Dictyosporium opacum*, and a conidial form of *Leptosphaeria herpotrichoides*. Guéguen (o.c. 21: 99) considers that *D. opacum* should be included with *Speira toruloides* (*Dictyosporium toruloides* (Corda) Guéguen).
- Sphacelia segetum** Lév., stage of *Claviceps purpurea*, q.v. Common on rye, etc.
- Spondylocladium atrovirens** Harz. Rarely found on tubers of *Solanum tuberosum* in Man.
- Sporocybe tessulata** Sacc., or near. On old damp stems of *Sonchus arvensis*; Univ. The stems in a moist chamber became covered with erect Stilbum-like columns of hyphae, c. $400 \times 40 \mu$, with a head formed of sterigmata, and spores $5-8 \times 3-5 \mu$.
- Sporodesmium compositum** Berk. & Curt. On old twigs of *Crataegus* and *Fraxinus*; Univ. Sooty tufts bear irregular spores which are often muriform.
- Sporotrichum parasiticum** Peck. On *Dibotryon morbosum* on *Prunus*; Univ. The black-knot bears the white mold, from which arise short conidiophores with spores $5-6 \times 1\frac{1}{2}-2 \mu$, hyaline.
- **pruinsum** Gilman and Abbott. Rare in soil.
- **roseum** Link. Occasional in soil. Colonies pink to lavender; spores $3-4 \times 2-3 \mu$.
- Stachybotrys cylindrospora** Jensen. Contaminating cultures; Univ. Hyphae $3-4 \mu$ wide; conidiophores about 50μ long, somewhat rough near the apex, bearing apical branches with dark smooth spores $8-12 \times 4-6 \mu$.
- **lobulata** Berk. On old paper, straw, etc.; Univ. Similar to the preceding except that the spores are rough and $8-12 \times 6-7 \mu$.
- Stemphylium macrosporoideum** (Berk.) Sacc. Rare in soil; det. Dr. Wiltshire. Other species of *Stemphylium* are common, but difficult to determine.
- Stilbum ?parvulum** Cooke & Ell. On debris in forest; Univ. Stilba pale yellow, short; spores $4 \times 1\frac{1}{2} \mu$, in masses.
- Streptothrix fusca** Corda. On dead twigs of *Corylus*; Minaki. Tufts sooty, nearly black; spores c. $8 \times 5 \mu$, brown. Another *Streptothrix*, from Kenora, is described by Sumstine. (See p. 142).
- Stysanus fimetarius** (Karst.) Massee & Salmon. On horse dung; Univ. Stalk up to 1 mm. high, $12-15 \mu$ wide; head slender, about $\frac{1}{2}$ mm. long; spores in chains, $5-7 \times 3-4 \mu$.
- **?microsporus** Sacc. On a contaminated agar culture; Univ. Head with projecting, flexuous hyphae; spores mostly $4 \times 3 \mu$.
- **Stemonites** (Pers.) Corda. Occasional on decaying plants, especially on rotted tubers of *Solanum tuberosum*; Univ.
- Tetracladium Marchalianum** de Wild. In water in a small slough, with *Lemonniera aquatica*; Univ. Det. C. W. Lowe, who has studied this organism in Quebec (Trans. Roy. Soc. Canada 3 ser. 21: 111, 1927), and has demonstrated that it is not an alga. Discussed by Karling (Mycologia, 27: 478, 1935).
- Tilachlidium humicola** Oudem. Isolated from soil in Man.
- Torula Allii** (Harz) Sacc. In soil; Univ.; det. Wiltshire; in wheat roots; Indian Head, Sask.
- **alnea** Peck. On twigs of *Alnus incana*; Vivian; on ?*Betula*; Berens River.
- **convoluta** Harz. Occasional in garden soil; Univ.; det. E. W. Mason. Spores $4-6 \times 4-5 \mu$, collecting in small heads.
- Trichocladium asperum** Harz. In garden soil; Univ. Spores 2-celled, the upper cell larger (see 10: 59).

FUNGI OF MANITOBA AND SASKATCHEWAN

oderma album Preuss. Fairly common in soil in Man. The cultures are white. The genus *Trichoderma* needs critical study. Some "strains" of *T. album*, though remaining white on agar, become green on sterilized leaves and stems.

ucum Abbott. Not common in soil. Cultures become yellowish or pale greenish; spores c. $4 \times 3 \mu$.

ningi Oudem. Very common in soil in Man. and Sask.; also in butter. Cultures mucose, green; spores oval.

iorum (Tode) Harz. Common on old wood, in soil and in butter in Man. and Sask. Cultures grow very rapidly, producing a thin white growth which soon becomes green in its where conidiophores produce the abundant conidia; conidia more or less spherical, 4μ . A potential parasite of other soil fungi (76). See also Buller (82, vol. IV).

sporium parasiticum Dearn. & Bisby (71:131). On leaves of *Amelanchier alnifolia*; viv. Spots reddish then yellowish; conidiophores hypophyllous; spores pale brown, continuous, $9-14 \times 4-6 \mu$.

thecium roseum Corda (*Cephalothecium roseum* Corda). A very common mold in Man. and Sask. It is sometimes semiparasitic, e.g. on leaves of *Triticum aestivum* in the greenhouse, and on fruits of *Prunus* sp. and *Citrullus vulgaris* in the field. *T. roseum* has been used by Greaney and Machacek (191) to "antagonize" root-rot fungi in soil.

utescens (Peck) Sacc. On old wood; Univ. Tufts pink, dense, isolated; spores $32 \times 10-16 \mu$, hyaline, 2-celled.

atostroma americanum Thüm. Very common on dead twigs of *Salix*, occasional on *Ulmus*; Univ. to Valley River, Man.; Saskatoon, Sask. Sporodochia sooty-black; spores when under the microscope, composed of an indefinite number of cells held together loosely in chains.

ium ?*Mycogonis* Tassi. On old *Salix*, together with several other fungi; Victoria Beach. Spores star-shaped with 3 arms each 3-4-celled and $15-20 \times 4-6 \mu$, hyaline.

ile Riess. On dead stems of *Convolvulus sepium*; Univ.; coll. M. Timonin. Similar to preceding, but the arms $36-40 \mu$ long, 4-6-celled.

ilaria vulgaris Tode, stage of *Nectria cinnabarina*, q.v. Common on branches of *Acer undulato*, *Caragana* sp., *Ribes* spp., *Pyrus baccata* and other plants in Man.; on *Prunus corymbosa*, *Ribes vulgare*, *Ulmus* sp., etc., in Sask. Sporodochia red or black; conidia $5-9 \times 2 \mu$.

lina persicina (Ditm.) Sacc. On acacia of *Puccinia Caricis grossulariata* on *Ribes*; of *Ustilago-vera agropyrina* on *Anemone*; of *Uromyces Fabae* on *Vicia*; Cowan and Univ. Sporodochia purple; spores $7-9 \mu$, globose.

um albo-atrum Reinke & Berth. Recorded (Can. Plant Disease Survey Report for 1944, 1935) as a cause of wilt of *Solanum tuberosum* in Man.; isolations made by the writers from wilted stems of potatoes have always yielded species of *Fusarium*. *V. albo-atrum*, species near it, was obtained rarely from soil.

um Bonord. Not common in soil in Man. Colonies yellow-green; spores $3-7 \times 2 \mu$ (76:265).

ii Peck. On gills of *Lactarius* and *Russula*; Victoria Beach eastward. Often prevents growth of spores by the mushroom. Conidiophores verticillate; spores $14-26 \times 10-12 \mu$.

m Pethybridge. In surface soil in Man. Cultures soon dark from chlamydospores; spores $6-10 \times 6-8 \mu$; conidia $4-8 \times 2-3 \mu$.

e (Link) Sacc. In soil in Man. Cultures white; conidiophores verticillately branched; conidia $3-5 \times 2-3 \mu$.

ciliata (Alb. & Schw.) Fr. On samaras of *Fraxinus*, etc.; Univ. Sporodochia colorless, surrounded by cilia; spores $8-12 \times 2 \mu$.

ar. stipitata (Lib.) Sacc. On horse dung; Univ. Sporodochia stalked; spores $4 \times 2 \mu$.

ooke. In a surface soil in Man. (78:51).

ONIALES

Rosae (Lib.) Fr., stage of *Diplocarpon Rosae* Wolf. Common, and sometimes abundant on cultivated roses, in Man. and Sask.

- Colletotrichum atramentarium** (Berk. & Broome) Taubenh. On stems of *Solanum tuberosum*; Univ., Man. and Unity, Sask. The fungus appeared to be parasitic in Sask., being present on the stems of a small patch which had been killed by the middle of August.
- **circinans** (Berk.) Vogl. Rare on bulb scales of *Allium Cepa*; Univ.
- **Dematium** (Fr.) Grove (*Vermicularia* Fr.). Common on old stems, including *Corallorrhiza*, *Osmorrhiza longistylis*, *Smilacina stellata* and *Taraxacum officinale*; along the Red River in Man.; on *O. longistylis* and *Zizia cordata* in Sask. Spores $17-24 \times 3-4 \mu$, fusoid, curved, continuous. On dandelion at Emerson the fungus appeared to be weakly parasitic.
- **Dematium** var. **samaricola** Sacc. On samarae of *Fraxinus pennsylvanica*; Univ. Spores as in the preceding, and there seems to be little reason for calling this a variety.
- **erumpens** Sacc. On petioles of *Rheum Rapaonticum*; Morden, Portage la Prairie, Winnipeg. Apparently causes injury to rhubarb, but the disease has not been studied critically. Spores $22-26 \times 3-5 \mu$.
- **fusarioides** (Ell. & Kellerm.) O'Gara, reported to be a stage of *Glomerella cingulata*. Apparently injurious on stems of *Asclepias* sp.; Univ. Spores $18-35 \times 5-6 \mu$.
- **graminicola** (Ces.) G. W. Wilson (*C. cereale* Manns). On *Avena sativa*; Grenfell, Indian Head, Saskatoon, and Summerberry, Sask.; on *Beckmannia Syzigachne* and *Poa pratensis*; Univ., Man.; probably this fungus on *Agropyron tenerum*; Rosthern, Sask. Spores $22-25 \times 4-5 \mu$; setae about $70 \times 6 \mu$.
- **Humuli** Dearness (71:132). On living leaves of *Humulus Lupulus*; Brandon (Margaret Newton) and Univ. Type from Kansas; also known in Maryland. Spots small, yellowish to brown; acervuli $50-110 \mu$, with few brown setae; spores $14-21 \times 4-6 \mu$.
- **Liliacearum** (Westend.) Ferrar. (*Vermicularia* Westend.). On living leaves and stems of *Smilax herbacea*; Univ. (See Miss Duke, Trans. Brit. Myc. Soc. 13:172.)
- **Lindemuthianum** (Sacc. & Magn.) Briosi & Cav. Not common, but sometimes injurious, to *Phaseolus vulgaris*; Brandon and Winnipeg, Man.; Indian Head, Rosthern, Saskatoon and Scott, Sask.
- [— **phomoides** (Sacc.) Chester. On fruits of *Lycopersicum esculentum* shipped to Winnipeg from the Bahamas. Not found on native plants.]
- **Pisi** Pat. One collection on leaves and pods of *Pisum sativum*; Brandon; coll. I. L. Conners; Aug. 4, 1923. Spots brown; spores $16-20 \times 4 \mu$.
- **Rudbeckiae** Peck. On old stems of *Rudbeckia laciniata*; Carman and Selkirk. Conspicuous on the dead stems; spores $15-27 \times 4 \mu$.
- Coryneum Kunzei** Corda. On twigs of *Quercus macrocarpa*; Univ. Spores brown, septate, $55-75 \times 12-15 \mu$.
- **pustulatum** Peck. On small twigs of *Quercus macrocarpa*; Univ. Spores up to 90μ long; perhaps only a form of the preceding.
- Cryptosporium nubilosum** Ell. & Ev. On *Carex* sp.; Univ. Spores $18-24 \times 3 \mu$. Entered by mistake under *Leptostroma caricinum* in "The Fungi of Manitoba."
- Cylindrosporium Apocyni** Ell. & Ev. On leaves of *Apocynum cannabinum*; Elma, Man.; of *A. scopulorum*; Saskatoon, Whitewood and Wroxton, Sask. Spores in a specimen from Sask. were $40-96 \times 3-4 \mu$; the specimen from Man. has somewhat narrower spores.
- **Artemisiae** Dearness & Barthol. On leaves of *Artemisia gnaphalodes*; Dauphin and Roblin. Spots brown under the white hairs of the host; spores $50-70 \times 3-4 \mu$.
- **Clematidis** Ell. & Ev. On leaves of *Clematis ligusticifolia*; Bethany, Man.; coll. R. C. Russell; det. J. J. Davis.
- **crescentum** Barthol. (*Septogloeum crescentum* (Barthol.) Dearness in litt.). Sometimes abundant on leaves of *Pastinaca sativa*; Univ. and Winnipeg. Spores $50-70 \times 5-6 \mu$, commonly crescent-shaped, septate.
- **Gei** Farlow. On leaves of *Geum strictum*; Clear Lake, and probably elsewhere: see *Cercospora Gei*.
- **Heraclei** Ell. & Ev. On leaves of *Heracleum lanatum*; Lydiatt to Swan River, Man.; Meeting Lake, Sask. Spores $40-70 \times 3-4 \mu$. *Septoria Heraclei* (Lib.) Desm. may be the same fungus.
- **hiemale** Higgins, stage of *Higginsia hiemalis* (Higgins) Nannfeldt (*Coccomyces hiemalis* Higgins). Common on leaves of *Prunus pennsylvanica*; Norway House southward and

- across Man., and at Saskatoon, Sask. Conidia $40-66 \times 3-4 \mu$. A collection at Minaki bears a *Phyllosticta* with spores $4 \times 1 \mu$, possibly a stage of *C. hiemale*.
- Cylindrosporium leptospermum** Peck (*Cercospora leptosperma* Peck). On leaves of *Aralia nudicaulis*; Beausejour, Berens River and Clear Lake, Man.; Cochin and Lake Waskesiu, Sask. Dr. Chupp considers that this species is properly placed in *Cylindrosporium*. The spots bear a whitish mold-like hypophyllous growth; spores $60-100 \times 2-3 \mu$.
- **lutescens** Higgins, stage of *Higginsia lutescens* (Higgins) Nannfeldt. On leaves of *Prunus virginiana*; Lydiatt, Norway House.
- **?officinale** Ell. & Ev. Immature on *Saponaria officinalis*; Morden.
- **Phalaridis** Sacc. & Dearness. On *Phalaris arundinacea*; Indian Head, Sask.
- **Prunophorae** Higgins, stage of *Higginsia Prunophorae* (Higgins) Nannfeldt. On leaves of *Prunus americana* or *P. nigra*; Morden. $40-55 \times 4 \mu$.
- **salicifoliae** (Trel.) J. J. Davis. On leaves of *Spiraea salicifolia* (*S. latifolia*); Berens River to Minaki and Neepawa. $30-60 \times 2-4 \mu$.
- **sibiricum** Dearness & Bisby (*Mycologia*, 20: 245). Type on leaves of *Apocynum sibiricum*; Pierson, Man.; on *A. scopulorum*; Oxbow, Sask. Spores $22-45 \times 3 \mu$, 1- to 3-septate.
- **Smilacis** Ell. & Ev. On leaves of *Smilacina stellata*; Treesbank, Univ.; det. Dr. Solheim. Spots reddish, numerous; spores $15-30 \times 2-3 \mu$.
- **Thalictri** (Ell. & Ev.) J. J. Davis. On leaves of *Thalictrum* sp.; Lydiatt. $40-80 \times 2-3 \mu$.
- **Toxicodendri** (Ell. & Martin) Ell. & Ev. On leaves of *Rhus Toxicodendron*; common at Victoria Beach, Man., and found also in Sask. Spots gray in centre, margin dark, broad; spores $40-80 \times 2-4 \mu$. See *Mycologia*, 8: 105.
- Entomosporium maculatum** Lév. On *Amelanchier alnifolia*; Meota, Sask.; on ?*Pyrus* sp., Brandon, Man. and Rosthern, Sask.
- Gloeosporium Betulae-papyriferae** Dearness & Overholts. On leaves of *Betula alba* var. *papyrifera*; Kenora and Morden. Spots brownish with the centre darker on the upper side of the leaf; spores small.
- **Chamaedaphnis** Dearness. On leaves of *Chamaedaphne calyculata*; Kenora. Spots brown; spores $15-18 \times 7-8 \mu$.
- **confluens** Ell. & Dearness. On leaves of *Sagittaria latifolia*; Univ. Spots translucent; acervuli confluent; spores $8-12 \times 3-4 \mu$.
- **Coryli** (Desm.) Sacc. On leaves of *Corylus rostrata*; Univ. Spots reddish-brown; spores $14-20 \times 5-7 \mu$.
- [— **Musarum** Cooke & Massee. Common on old "peel" of *Musa sapientum* in Winnipeg markets. Spores $10-14 \times 4-5 \mu$.]
- **Polygoni** Dearness & House. On leaves of *Polygonum sagittatum*; Minaki. $4-8 \times 2 \mu$.
- **Psoraleae** Peck. On leaves of *Psoralea esculenta*; Camp Hughes; coll. W. L. Gordon. $17-22 \times 4-6 \mu$.
- **Ribis** (Lib.) Mont. & Desm., stage of *Pseudopeziza Ribis*. On leaves of *Ribes aureum*; Univ., Man.; of *Ribes nigrum*; Saskatoon, and *Ribes* sp., Indian Head, Sask. $12-26 \times 6 \mu$.
- **Salicis** Westend. On leaves of cultivated *Salix*; Morden. $14-18 \times 6-8 \mu$.
- **spadiceum** Dearness & Bisby (71: 133). On leaves of *Trifolium pratense*; Birds Hill. Spots dark-brown, elongate, usually passing inward from the edge of the leaf, often confluent; acervuli deep-seated, pushing up under the cuticle, amphigenous; spores $3-8 \times 1-2 \mu$, conidiophores $23-30 \times \frac{1}{2} \mu$. Common at Birds Hill: found in 1927, 1928, and especially in 1935 by I. L. Connors and G. R. Bisby; not found elsewhere. *G. caulivorum* Kirch. and *G. Trifolii* Peck have much larger spores.
- **?tremellinum** Sacc. On leaves of *Acer spicatum*; Victoria Beach. $4-8 \times 1\frac{1}{2}-3 \mu$.
- **venetum** Speg., stage of *Elsinoe* (*Plectodiscella*) *veneta*. Rarely seen on *Rubus idaeus* var. *strigosus*; Hartney and Sidney.
- sp. On leaves of *Ficus elastica* in houses or greenhouses in Man. Spores $12-16 \times 4-6 \mu$.
- Libertella acerina** Westend. On bark of *Acer Negundo*; Univ. Spores c. $20 \times 1 \mu$, oozing out in amber tendrils.
- **betulina** Desm. On branches of *Betula alba* var. *papyrifera*; Norway House and Victoria Beach. Spores $12-15 \times 1-2 \mu$, forming reddish masses on the white bark.
- Marssonina Aquilegiae** Dearness (71: 134 as *Marssonina*). On leaves of *Aquilegia* sp.; Univ. Spores $10-17 \times 4-5 \mu$, 2-celled. Mr. W. B. Grove states (personal communication) that he considers this to be *Actinonema Aquilegiae* Grove.

- Marssonina Castagnei** (Desm. & Mont.) Magn. On leaves of *Populus balsamifera*; Univ.; Man.; of *P. tremuloides*; Indian Head, Sask. Spores $13-20 \times 4-7 \mu$, with a septum near one end.
- **Martini** (Sacc. & Ell.) Magn. Common on leaves of *Quercus macrocarpa*; Carberry, Morden and Univ. Spots pale; spores $14-25 \times 3 \mu$.
- **Potentillae** (Desm.) Magn., stage of *Diplocarpon Earliana* (Ell. & Ev.) Wolf. On leaves of *Fragaria glauca*; Dana, Sask.; of *F. ?pauciflora*; Clear Lake, Man.; of *F. sp.* (wild strawberry); Univ. Spores $20-26 \times 5-6 \mu$, guttulate, 2-celled.
- **Sonchi** Dearness & Bisby (Mycologia, 20: 243 as *Marssonina*). Common on leaves of *Sonchus arvensis*; Gladstone, Minaki, Univ. and Winnipeg. Spots brown with purplish border; spores $10-13 \times 3-5 \mu$.
- sp. On *Salix* sp.; Broadview, Sask. Spores $12-16 \times 6-7\frac{1}{2} \mu$, unequally 2-celled. Near *M. Kriegeriana* Bres.
- Melanconium cerasinum** Peck, probably. On branches of *Prunus* sp.; Univ. A Valsaria was also present with spores $24-32 \times 12-14 \mu$, 2-celled, brown.
- **parvulum** Dearness & Batholomew. On branches of *Betula alba* var. *papyrifera*; Victoria Beach. See also *Melanconis ?decoraensis*.
- Monochaetia Kriegeriana** Bres. On living leaves of *Epilobium angustifolium*; Roblin; coll. I. L. Connors. Spores $21-26 \times 4 \mu$, pale yellow, 4-celled with a seta at the end $8-10 \mu$ long, and a similar pedicel.
- Myxosporium nitidum** Berk. & Curt. On twigs of *Cornus stolonifera*; Univ.
- Pestalozzia bicilia** Dearness & Bisby (71: 134). On twigs of *Viburnum Opulus* (cult.) Univ. Spores $20-27 \times 4\frac{1}{2}-6 \mu$, 5-celled, pale brown, and cells somewhat paler; apical cell with two equal divergent setae $10-20 \mu$ long. A similar or possibly identical fungus also on twigs of *Quercus macrocarpa*.
- **insidens** Zabriskie. On outer bark of living *Ulmus americana*; Univ. Spores $30-35 \times 9 \mu$, 6-celled, olive-brown, end cells paler, apical cell tipped with one rather long seta, the basal cell with a similar pedicel. This is a Monochaetia.
- **pezizoides** de Not. form **longiseta** Dearness (71: 135). Common on dead twigs of *Symphoricarpos occidentalis*; Univ. Spores $28-36 \times 9-10 \mu$, 5-celled, with three or four long setae. Brenckle (Mycologia, 22: 161) described this as *Labridella Cornu-cervi* n. gen. et sp.; see Fungi Dakotenses, 663. It is associated with *Cryptospora karzensis*.
- sp. A Pestalozzia occasionally found in soil in Man., and in roots of Triticum in Sask., has not been identified. Spores $18-22 \times 6-7 \mu$, 4-celled, brown with end cells pale; two or three terminal setae about as long as the spore.
- Septogloeum Apocyni** Peck. On leaves of *Apocynum sibiricum*; Valley River. Spores $26-54 \times 8-9 \mu$.
- **?Potentillae** Allscher. On leaves of *Potentilla palustris*; Norway House. Spores $36-44 \times 6-8 \mu$, 4-celled. These spores are rather wide for this species as described.
- **rhopalodeum** Dearness & Bisby (Mycologia, 20: 243). Common on leaves of *Populus tremuloides*; Univ. Spores $40-60 \times 8-12 \mu$, commonly 3-celled, the middle cell $21-30 \mu$ long.
- Steganosporium Fautreyi** Sacc. & Syd. On branches of *Betula alba* var. *papyrifera*; Victoria Beach. Spores brown, muriform, c. $48-52 \times 20 \mu$.
- Titaospora detospora** (Sacc.) Bubak (*Gloeosporium Equiseti* Ell. & Ev.). On *Equisetum sylvaticum*; Oakville, Man.; on *Equisetum* sp.; Macdowall, Sask. Spores $35-50 \times 3 \mu$.

SPHAEROPSIDALES

- Ascochyta Compositarum** J. J. Davis. On leaves of *Helianthus tuberosus*; Univ. $10-15 \times 3-4 \mu$.
- **graminicola** Sacc. On *Agropyron Smithii*, *Hierochloe odorata* and *Glyceria* (*Panicularia*) *grandis* in Man.; on *H. odorata*, Rosthern and Vonda, Sask. Spores $15-20 \times 3-4 \mu$, sometimes (perhaps in different varieties of the fungus) up to 30 or even 40μ long.
- **infuscans** Ell. & Ev. On leaves of *Ranunculus abortivus*; Brandon. $12-17 \times 4-5 \mu$.
- **Medicaginis** Bres. On *Medicago sativa*; Univ., Man.; Fort Qu'Appelle, Indian Head and Saskatoon, Sask. The spores in the Man. specimen were rather small, $10-14 \times 4-5 \mu$. Some authors refer this and *A. Meliloti* to the pycnidial stage of *Mycosphaerella lethalis* Stone. See *Stagonospora Meliloti*.

- Ascochyta parasitica** Fautr. On living stems of *Althaea rosea*; Univ. $9-12 \times 3-4 \mu$.
- **Pisi** Lib. On leaves of *Pisum sativum*; Winnipeg, Man.; Rosthern and Saskatoon, Sask. Specimens of pea seed sent in from Winnipeg because of discoloration produced *A. Pisi* in a damp chamber.
- **Rhei** Ell. & Ev. On leaves of *Rheum Rhaiponticum*; Lydiatt and Univ., Man.; Indian Head and Saskatoon, Sask. $11-16 (20) \times 3-5 \mu$.
- **teretiuscula** Sacc. & Roum. On leaves of *Carex ?varia*; Vivian. $10-14 \times 3 \mu$.
- **Thaspiae** Ell. & Ev. On leaves of *Zizia ?aurea*; Univ. Spores $22-26 \times 6-7 \mu$, 2-celled, 4-guttulate, with indications of becoming 4-celled and therefore a *Stagonospora*.
- **?Viciae** Lib. On leaves and pods of *Vicia villosa*; Univ. Spores $12-17 \times 4-5 \mu$; probably a form of *A. Pisi*.
- Asteroma Gentianae** Auct. Amer. On *Gentiana Andrewsii*; Univ. Spores globose or broadly elliptical. Davis (Trans. Wis. Acad. Sci. 24: 280) reports that Petrak suggests that this fungus should be called *Asteromella Andrewsii*.
- Botryophoma populicola** Karst. On bark of *Populus tremuloides*; Univ. Pycnidia black, erumpent through the bark usually in clusters, oval; spores $3-4 \times 1 \mu$.
- Brencklea Sisyrrinchii** (Ell. & Ev.) Petrak (*Kellermannia* Ell. & Ev.). On stems and leaves of *Sisyrrinchium angustifolium*; Brandon. Spores $18-25 \times 3-5 \mu$, pale brown, 3-celled, prolonged into an awn at one end.
- Camarosporium Amorphae** Sacc. On twigs of *Amorpha fruticosa*; Univ. Spores brown, $20-30 \times 9-12 \mu$, with 3 cross septa and often one longitudinal septum.
- **Caraganae** Karst. On *Caragana arborescens*; Univ., Man., and Indian Head, Sask. Spores $15-24 \times 8-12 \mu$, with commonly 3 cross septa, sometimes with one or rarely two longitudinal septa. Associated with *Cucurbitaria Caraganae*.
- **cruciatum** (Fuckel) Sacc. On twigs of *Ulmus americana*; Univ. Pycnidia in the bark, $150-170 \mu$ wide; spores oval or globose, $6-9 \times 5-8 \mu$, with septation commonly cruciform, resulting in 4 cells. Recorded previously on *Ulmus* in Europe.
- **?Orni** P. Henn. On dead water-sprouts of *Fraxinus pennsylvanicus*; Univ. Spores $14-20 \times 6-8 \mu$. Further description in 71: 136.
- **?Negundinis** Ell. & Ev. On branches of *Acer Negundo*; Univ. Spores $10-16 \times 7-10 \mu$; septation variable, sometimes cruciform.
- **umbonatum** Brenckle. On twigs of *Symphoricarpos occidentalis*; Univ. Spores $13-18 \times 6-7 \mu$. Determined by Dr. Brenckle, who described the species from North Dakota (*Mycologia*, 22: 161) and has issued it as *Fungi Dakotenses*, 653.
- **sp.** On twigs of *Sambucus* sp.; Saskatoon, Sask. Pycnidia separate, about 500μ wide and 300μ high, wall thick, spores $10-22 \times 10-14 \mu$, brown, mostly with 3 cross septa and one longitudinal septum. Distinct from *C. dichomeroides* Brun.
- Catinula ?turgida** (Fr.) Desm. On branches of *Corylus*; Univ. Spores $20-24 \times 8 \mu$, larger than described.
- Chaetomella atra** Fuckel var. **lignicola** Sacc. On decorticated wood of ?*Fraxinus*; Winnipeg. Pycnidia black, becoming open at the top and cupulate, surrounded by bristles; spore-mass gray; spores $11-13 \times 2 \mu$.
- Cicinobolus Cesatii** de Bary. On *Podosphaera Oxyacanthae* on *Prunus* spp.; Univ. and Valley River, Man. and Saskatoon, Sask.; on *Microsphaera*; Univ. Spores $4-8 \times 1\frac{1}{2}-2 \mu$ ($2\frac{1}{2}-3 \times 1 \mu$ in Rabenhorst).
- Coniothyrium Fuckelii** Sacc., stage of *Leptosphaeria Coniothyrium*. On *Rubus idaeus* var. *strigosus*; Univ. $2\frac{1}{2}-4 \times 2-3 \mu$.
- **?olivaceum** Bonord. On twigs of *Vitis vulpina*; Univ. $5-6 \times 2\frac{1}{2}-3\frac{1}{2} \mu$.
- **parasitans** (Berk. & Rav.) Tassi. On *Hypoxylon*; Univ. Blackish pycnidia abundant; spores $8-10 \times 4 \mu$.
- **pyrinum** (Sacc.) Sheld. On leaves of *Pyrus* sp.; Morden, Man. and Indian Head, Sask. Spores $5-6 \times 2-3 \mu$, smoky in color, at least in mass.
- **?Tamaricis** Oudem. On twigs of *Tamarix*; Univ. $5-7 \times 3-4 \mu$.
- Cryptosporiopsis cornina** (Peck) Petrak & Syd. On branches of *Cornus instolonea*, Saskatoon, Sask.; of *C. stolonifera*; Univ., Man. $30-40 \times 10-16 \mu$.
- Cytospora ambiens** Sacc., stage of *Valsa ambiens*, q.v. On *Celastrus scandens*, *Pyrus baccata*, *Salix* sp., etc.; Univ., Man.; on *Prunus Besseyi* and *Rosa* sp.; Saskatoon, Sask. $6-10 \times 1\frac{1}{2}-2 \mu$.

- Cytospora annulata* Ell. & Ev. On twigs of *Acer Negundo*; Univ., Man. and Indian Head, Sask. $5-7 \times 1-1\frac{1}{2} \mu$.
- ?*Capreae* Fuckel. On twigs of *Salix*; Univ.
- *chrysosperma* Fr. Common and apparently injurious on *Populus tremuloides* and *P. deltoides* in Man. and Sask.; on *Salix pentandra* (*S. laurifolia*); Saskatoon, Sask. Spores $c. 4 \times 1 \mu$.
- *leucostoma* Sacc. On diseased branches of *Prunus* sp.; Morden, Man. and Saskatoon, Sask.; on *Amelanchier alnifolia*; Saskatoon, Sask. See *Valsa leucostoma*.
- *Symphoricarpi* Ell. & Barth. On twigs of *Symphoricarpos occidentalis*; Univ., Man.; det. Brenckle; Indian Head, Sask. $5-8 \times 2 \mu$.
- Darluka filum* (Biv.-Bern.) Cast. On sori of various Uredinales in Man. Spores hyaline, apiculate, 2-celled, $12-17 \times 4-5 \mu$.
- Dilophospora Alopecuri* (Fr.) Fr. On *Hordeum vulgare*; Carlyle, Sask.; July 27, 1924; coll. P. M. Simmonds. This is the only record for the prairie provinces.
- Dinemasporium graminum* Lév. On old culms of grass; Univ. Pycnidia surrounded by setae; spores $12-16 \times 2-3 \mu$, continuous, with a long cilium at each end.
- *Robiniae* Gerard. Common on old branches, etc., of *Celastrus scandens*, *Fraxinus pennsylvanicus*, *Populus* sp., *Tilia americana* and *Ulmus americana*; Univ. and eastern Man. Spores $6-8 \times 2-3 \mu$, ciliate at the ends.
- Diplodia Amorphae* (Wallr.) Sacc. Common on branches of *Amorpha fruticosa*; Univ. Spores brown, 2-celled, $20-27 \times 8-11 \mu$.
- ?*atrata* (Desm.) Sacc. On branches of *Acer Negundo*; Univ. Spores golden-brown, $26-28 \times 10-11 \mu$.
- *Humuli* Fuckel. On dead stems of *Humulus Lupulus*; Univ.; May. Spores brown, $c. 20 \times 10 \mu$, 2-celled.
- *melaena* Lév. On dead twigs of *Ulmus americana*; Univ.; Man.; May-June. $20-25 \times 9-10 \mu$. Possibly this species on wood of *Ulmus* sp.; Saskatoon, Sask.
- ?*Pruni* Fuckel. On branches of *Prunus virginiana*; Univ.; April. Spores $20-24 \times 10-12 \mu$.
- *sarmentorum* Fr. On dead stems of *Menispermum canadense*; Univ.; June. $21-26 \times 9-12 \mu$.
- *Zeae* (Schw.) Lév. Rare on *Zea Mays*; Univ., Man. and Saskatoon, Sask. Spores in the single Manitoba collection $24-30 \times 6 \mu$.
- Diplodina Ellisii* Sacc. Not uncommon on dead stems of *Chenopodium album*; Univ. Spores $16-22 \times 7-9 \mu$, hyaline to yellowish, 2-celled. A form or species on old *Axyris amaranthoides* has spores $11-16 \times 5-6 \mu$.
- ?*Salicis* Westend. On branches of *Salix*; Univ. $15-22 (25) \times 3-4 \mu$.
- Discosia artocreas* (Tode) Fr. Not uncommon on old leaves of *Geum strictum*, *Populus*, *Quercus macrocarpa*, *Rubus triflorus*; and samarae of *Fraxinus pennsylvanica*; Berens River, Univ., Man.; on overwintered leaves of *Rosa* sp., Saskatoon, Sask. The pycnidia are conspicuous; the spores resemble those of *Monochaetia*, and are $14-18 \times 2\frac{1}{2}-3 \mu$, 4-celled with a "cilium" at each end.
- Dothichiza Symphoricarpi* Rehm. On twigs of *Symphoricarpos*; Univ.; det. Brenckle. Spores $16-20 \times 3-4 \mu$, hyaline.
- Hainesia borealis* Ell. & Ev. Reported by Connors (Can. Plant Disease Survey Report for 1934: 101) on *Galium boreale* from Dana, Sask.
- Haplosporella diatrypoides* Ell. & Barth. On old deciduous wood; Univ.; det. E. A. Burt as apparently this species.
- *Symphoricarpi* Peck, or a variety. On twigs of *Symphoricarpos occidentalis*; Univ.; det. Brenckle. Spores $15-24 \times 6-11 \mu$, brown.
- Hendersonia arundinacea* (Desm.) Sacc. On old stems of *Phragmites communis*; Berens River. $25-40 \times 4-5 \mu$.
- *Mali* Thüm. On living leaves of *Amelanchier alnifolia*; Univ. Spores $12-15 \times 4-5 \mu$, brown, mostly 4-celled.
- Heteropatella Viburni* Dearness & Bisby (71: 137). On branches of *Viburnum Opulus*; Univ. Pycnidia superficial, dark brown; spores $3\frac{1}{2}-5 \times 2\frac{1}{2} \mu$, hyaline, guttulate at each end.
- Leptostroma Pinastri* Desm. On needles of *Pinus Banksiana*; Victoria Beach, Man. and Macdowall, Sask. $6-7 \times \frac{1}{2}-1 \mu$.

- Leptothyrium litigiosum** (Desm.) Sacc. On dead petioles of *Pteretis nodulosa*; Selkirk and Univ. Spores $6-8 \times 1-2 \mu$, hyaline. One specimen showed a developing ?*Lophiosphaeria* with young ascospores $10-12 \times 4 \mu$, hyaline, 2-celled.
- Macrophoma Salicis** Dearness & Barth. On twigs of *Salix*; Univ. $12-24 \times 7-9 \mu$.
- Mastomyces Friesii** Mont. On dead branches of *Ribes floridum*; Univ. Pycnidia superficial; ostiole becoming covered with masses of spores; spores $20-30 \times 3-4 \mu$, 4-celled with a gutta in each cell, hyaline. See Mycologia, 26: 266 and *Godronia urceolus*.
- Microdiplodia ?subsecta** Allesch. On twigs of *Acer Negundo*; Univ. Spores brown, $8-11 \times 4 \mu$, 2-celled. Species of *Microdiplodia* are found on various hosts: the differentiation is often slight and if named it is usually by the name of the host.
- Micropera drupacearum** Lév. On branches of *Prunus Besseyi* and *P. nigra*; Univ. $30-54 \times 3-4 \mu$.
- Phleospora Aegopodii** (Desm.) Grove (*Septoria Aegopodii* Desm.). On leaves of *Osmorrhiza longistylis*; Carman, Univ. and Winnipeg. Grove (9) describes this fungus well. The pycnidium wall is imperfect; spores $45-80 \times 3-4 \mu$ in Man. specimens.
- **Anemones** Ell. & Kellerm. On leaves of *Anemone cylindrica*; Boissevain and Dauphin, Man. and Humboldt, Sask. Spores $40-46 \times 4 \mu$ in the Sask. specimen.
- **canadensis** Bubak & Dearness. On leaves of *Acer spicatum*; Victoria Beach. Spores $35-65 \times 2-3 \mu$, Gilman & Archer (8) make this name, and scores of others, synonymous with *Septoria Aceris* (Lib.) Berk. & Br.
- Phoma ?Astragali** Cooke & Hark. On stems of *Astragalus pectinatus*; Sutherland, Sask. Spores $5-7 \times 2 \mu$, often with oil drops, but scarcely spindle-shaped as described.
- **?berberidella** Sacc. & Syd. On twigs of *Berberis vulgaris*; Univ. $4-5 \times 2-3 \mu$.
- **Betae** Frank. On rotted roots of *Beta vulgaris* in storage; Univ.
- **destructiva** Plowr. Rare on fruits of *Lycopersicum esculentum*; Univ.; destructive to a shipment of tomatoes reaching Winnipeg from Bermuda. Spores $4-8 \times 2-3 \mu$, continuous, but Grove (9) finds they become septate and that the fungus is *Ascochyta Lycopersici* Brun.
- **elliptica** Peck. On stems of *Galium boreale*; MacDowall and Saskatoon, Sask.
- **fumosa** Ell. & Ev. On twigs of *Acer Negundo*; Univ. Spores c. $5 \times 3 \mu$.
- **herbarum** Westend. On flower-stalk of *Rheum Rhaponticum*; Univ. $4-6 \times 2 \mu$.
- **hibernica** Grimes, O'Connor & Cummins. Fifty-two isolations from butter; occasional in soil; in moldy eggs; from yeast-cakes which had developed pink spots. Cultures on agar produce abundant pycnidia from which exude masses of flesh-colored spores, $4-7 \times 2-3 \mu$. This fungus was also isolated from the air over the ocean near Ireland (69).
- **lingam** (Tode) Desm. Reported on *Brassica oleracea* vars. *botrytis* and *capitata* in Man., but specimens have not been seen.
- **longissima** (Pers.) Westend. Common in the spring on dead stems of *Chenopodium album*; Univ., Man. and Midale, Sask. The fungus produces very long narrow black stripes on the stems, dotted with pycnidia. The Sask. specimen bore spores $4-7 \times 3\frac{1}{2}-4 \mu$, each usually with two guttae.
- **Menispermii** Peck. On stems of *Menispermum canadense*; Univ. Spores $7-9 \times 1\frac{1}{2}-2 \mu$, and the fungus agrees with the type.
- **nebulosa** (Pers.) Mont. in Berk. On old stems of *Artemisia* sp. and *Laportea canadensis*; Grand Beach and Univ. Spores $6-10 \times 2-4 \mu$, biguttulate. This composite species is doubtless common.
- **?negundinicola** Thüm. On samarae of *Acer Negundo*; Univ.
- **?Paoniae** Allescher. On old stems of *Paeonia albiflora*; Univ. $6-10 \times 3-5 \mu$.
- **Pruni** Peck. On twigs of *Prunus ?virginiana*; Univ. $6-9 \times 2-2\frac{1}{2} \mu$. Grove (9) includes this with *Phomopsis Prunorum*.
- **?sambucina** Sacc. On twigs of *Sambucus* sp.; Indian Head, Sask. $6-10 \times 3-4 \mu$.
- **thermopsidicola** P. Henn. On stems of *Thermopsis rhombifolia*; Saskatoon.
- [*Phomopsis Citri* Fawcett. On grapefruits imported into Winnipeg; coll. J. E. Machacek.]
- Phyllosticta* abortiva** Ell. & Kellerm. On *Menispermum canadense*; Univ. Spores $3-4 \times 1 \mu$. Tehon and Daniels (Mycologia, 19: 119) contend that this should be called *P. menispermicola*, and the *Septoria* on similar spots *S. abortiva*. Both may prove to be stages of the same fungus.

* All species of *Phyllosticta* and *Septoria* here reported inhabit living leaves unless otherwise stated.

- Phyllosticta ?althaeicola** Pass. On spots on stems of *Althaea rosea*; Univ. Spots gray; pycnidial wall thin; spores $5-7 \times 2 \mu$.
- **Antirrhini** Syd. On *Antirrhinum majus*; Univ. $4-6 \times 1\frac{1}{2}-2 \mu$.
- **Berberidis** Rabenh. On *Berberis vulgaris*; Univ. Spots gray with purple border; spores $4-6 \times 2-3 \mu$.
- **Betae** Oudem. (no doubt the same fungus as *Phoma Betae*). Common on *Beta vulgaris*; Univ. Garden-beets, sugar-beets and mangels are affected, and sometimes injured.
- **Betulae** Ell. & Ev. On *Betula alba* var. *papyrifera* in cultivation; Univ. $4-5 \times 1 \mu$.
- **brunnea** Dearn. & Barth. On *Populus balsamifera*; along the Hudson Bay Railway, 352 miles from The Pas; coll. P. H. Gregory, Aug. 23, 1934. Agrees with *Fungi Columbiana*, 5040; spores $4-6 \times 1-2 \mu$. Probably this species, with spores $3-4 \times \frac{1}{2}-1 \mu$, on *Populus tremuloides*; Emma Lake, Sask.
- **Caricis** (Fuckel) Sacc. On *Carex ?vesicaria*; Norway House. $5-6 \times 2 \mu$.
- **circumscissa** Cooke. On *Prunus* sp. cult.; Morden. Spots brown, gray in centre, sometimes falling out of the leaf; spores $4-6 \times 1\frac{1}{2}-2 \mu$.
- **Commonsii** Ell. & Ev. On *Paeonia* sp.; Univ. Pycnidia few, epiphyllous; spores $4-8 \times 2-4 \mu$.
- **Convallariae** Pers. On *Smilacina stellata*; Univ., Vivian, Man.; probably this species on the same host at Indian Head and Mancroft, Sask. Gilman and Archer (8:433) consider this a phase of *Sphaeropsis cruenta*. $10-12 \times 8-9 \mu$.
- **Corni-canadensis** Dearness & Bisby (71:138). On *Cornus canadensis*; Victoria Beach. Spots 1-2 mm. wide; pycnidia epiphyllous, c. 150μ wide; spores $3\frac{1}{2}-5 \times \frac{1}{2}-1 \mu$.
- **cornuti** Ell. & Kellerm. On *Asclepias syriaca*; Univ. Spores $3-4 \times 1 \mu$; *Cercospora ?clavata* is present on the same leaves; the *Phyllosticta* may be a microconidial stage.
- **Crataegi** (Cooke) Sacc. On *Crataegus* sp.; Univ. $3-4 \times 1\frac{1}{2} \mu$.
- **Dearnessi** Sacc. On *Rubus triflorus*; Victoria Beach. $4-5 \times 1\frac{1}{2} \mu$.
- **decidua** Ell. & Kellerm. On *Steironema ciliatum*; Univ.; on *Geum strictum*; Berens River. $4-6 \times 1\frac{1}{2}-2\frac{1}{2} \mu$.
- **Dianthi** Westend. On *Lychnis ?chalcedonica*; Brandon, Univ., Man. and Indian Head, Sask. Spots more or less circular, up to 2 cm. wide, pallid brown, border dark, often concentrically marked; pycnidia epiphyllous, $100-150 \mu$ wide, wall thin; spores ellipsoid, eguttulate, $6-12 \times 3-5 \mu$. Some of the spores (in the Sask. material) show a very slight tendency to become narrower at the centre, and the fungus perhaps becomes *Ascochyta Dianthi* Berk. (see Grove, 9). The specimens seem to fit the account of *P. Lychnidis* in Gilman and Archer (8:374).
- **Dracocephali** Dearness & Bisby (*Mycologia*, 18:252). Common on *Dracocephalum parviflorum*; Fisher Branch, Killarney, Lydiatt, Roblin and Univ. $7-13 \times 3\frac{1}{2}-4\frac{1}{2} \mu$.
- **fatiscens** Peck. On *Nymphaea advena*; Norway House. Spots 1-2 cm.; spores $7-10 \times 2\frac{1}{2}-4 \mu$.
- **Heraclei** Ell. & Dearn. On *Heracleum lanatum*; Dauphin. Agrees with *Fungi Columb.* 3774. $4-6 \times 2 \mu$.
- **hibiscina** Ell. & Ev. On *Hibiscus esculentus*; Morden. $4-8 \times 2 \mu$.
- **hispida** Ell. & Dearness. On *Smilax herbacea*; Univ. Spots indefinite; spores $3-4 \times 1 \mu$.
- **innumerabilis** Peck. On *Amelanchier alnifolia* across Man. and Sask. The brown spots become covered below with pycnidia; spores $6-8 \times 1\frac{1}{2}-2 \mu$.
- **intermixta** Seaver. On *Populus* sp.; Univ.; det. J. J. Davis.
- **ivicola** Ell. & Ev. On *Iva xanthifolia*; Dauphin, Univ. The spots are as described, but the spores attain a larger size, being $4-10 \times 2-3 \mu$.
- **Lappae** Sacc. On *Arctium ?Lappa*; Univ. $6-9 \times 3 \mu$.
- **Lentaginis** Sacc. & Syd. On *Viburnum pubescens*; Univ. $4-6 \times 2-3 \mu$.
- **livida** Ell. & Ev. On *Quercus macrocarpa*; Univ.; det. J. J. Davis.
- **?Lychnidis** (Kunze & Schmidt) Ell. & Ev. On *Lychnis* sp. cult.; Indian Head, Sask.
- **minima** (Berk. & Curt.) Ell. & Ev. On *Acer spicatum*; Minaki, Victoria Beach. Spores mostly $6 \times 2 \mu$.
- **minutissima** Ell. & Ev. On *Acer spicatum*; Minaki. $2-2\frac{1}{2} \times \frac{1}{2}-1 \mu$.
- **Negundinis** Sacc. & Speg. On *Acer Negundo*; Univ. $8-9 \times 3-4 \mu$.

- Phyllosticta Petasitidis** Ell. & Ev. On *Petasites sagittatus*; Clear Lake. Spots subcircular, whitish, marked with concentric darker lines, border marked also with a dark brown zone 1-2 mm. wide; pycnidia few, epiphyllous; spores 5-7 \times 2-3 μ .
- **phomiformis** Sacc. On *Quercus macrocarpa*; Carman, Univ., Victoria Beach. Spores large, commonly 14-22 \times 6-9 μ , but may reach 28 μ in length. This species has been placed in *Dothiorella* and *Macrophoma*.
- **plantaginicola** Tehon & Daniels. Common on *Plantago major*; Brandon, Dunrea, Elm Creek, Macgregor and Univ. 8-14 \times 2-4 μ .
- **?Plantaginis** Sacc. On *Plantago major*; Berens River. Spots 1-3 mm., circular, whitish, thin and translucent, border darker, pycnidia amphigenous, 80-100 μ ; spores 4-6 \times 2-2½ μ , subcylindric, with a small gutta near each end.
- **rhoicola** Ell. & Ev. On *Rhus Toxicodendron*; Victoria Beach. Spores 4-6 \times 2 μ , often with a gutta at each end of the spore. Little of it was found.
- **Rudbeckiae** Ell. & Ev. On *Rudbeckia laciniata*; Dauphin. Spores 5-10 \times 2½-3 μ , straight or somewhat curved.
- **spermoides** Peck. On *Vitis vulpina* and apparently this species on *Celastrus scandens*; Univ. Spores 3-5 \times 1 μ , cylindrical with obtuse ends.
- **straminella** Bres. On *Rheum Rhaiponticum*; Brandon, Univ. 10-20 \times 4-5 μ .
- **Symphoricarpi** Westend. On *Symphoricarpos* sp.; ?Marcelin, Sask.
- **Tiliae** Sacc. & Speg. On *Tilia americana*; Univ. 3-7 \times 2-3 μ .
- **verbenicola** Martin. On *Verbena hastata*; Berens River. Spots small, ¼-1 mm. wide, pallid, thin and translucent, with a reddish-purplish raised border; pycnidia few, amphigenous, 90-140 μ ; spores 5-9 \times 2-3 μ . Described on *V. hastata* in New Jersey; recorded by Davis (Trans. Wisconsin Acad. Sci. 21: 295) on *V. stricta* in Wisconsin.
- **Violae** Desm. On *Viola canadensis* and *V. sp.*; Gilbert Plains, Killarney and Univ. Spores 4-8 \times 2-3 μ , hyaline, but somewhat brownish in mass.
- **viridis** Ell. & Kellerm. On *Fraxinus pennsylvanica* var. *lanceolata*; Lumsden, Sask.; on *F. pennsylvanica*; Univ., Man. Gilman & Archer (8: 332) combine *P. viridis*, *Piggotia Fraxini*, *Septoria Besseyi* and other names under *Cylindrosporium Fraxini* (Ell. & Kell.) Ell. & Ev.
- **virginiana** (Ell. & Halsted) Tassi. On *Prunus virginiana*; Univ. Spores 5-8 \times 1-1½ μ . The spots and spores are very similar to those of *P. innumerabilis*.
- **viticola** (Berk. & Curt.) Thüm., stage of *Guignardia*. On *Psedera quinquefolia*; Kenora. Spores c. 10 \times 6 μ .
- Piggotia Fraxini** Berk. & Curt. On leaves of *Fraxinus campestris*; Saskatoon and Sutherland, Sask.; of *F. pennsylvanica* var. *lanceolata*; Indian Head and Lumsden, Sask.; common on *F. pennsylvanica*; Univ., Man. See *Phyllosticta viridis* above.
- **Negundinis** Ell. & Dearness. On leaves of *Acer interior*; Saskatoon, Sask.; very abundant on fallen leaves of *Acer Negundo* in October; Univ., Man. Possibly related to *Septoria Negundinis*.
- Placosphaeria punctiformis** (Fuckel) Sacc., stage of *Pseudopeziza repanda*, q.v. On leaves of *Galium boreale*; Dana, Sask.; spores c. 6 \times 1½ μ ; on *G. triflorum*; Birds Hill and Univ., Man.
- Plenodomus Meliloti** Dearness & Sanford. On *Althaea rosea*; Regina, Sask.; on *Melilotus alba*; Saskatoon and Scott, Sask. This fungus was described (Ann. Mycol. 28: 324) from Alberta, where an injurious brown root rot of sweet clover is produced by this fungus. It has not yet been found in Manitoba.
- Pyrenochaete erysiphoides** Sacc. On stems of *Cirsium arvense*; Univ. Pycnidia c. 150 μ in diameter, the ostiole surrounded with setae up to 150 \times 5 μ ; spores 4-6 \times 2 μ .
- Rhabdospora rugica** Syd. On dead stems of *Thalictrum dasycarpum*; Indian Head, Sask. Spores hyaline, without septa or guttae, 15-30 \times 2 μ .
- **Solidaginis** (Cooke & Ell.) Sacc. On stems and insect galls of *Solidago* sp.; Univ., Man., Indian Head and Midale, Sask. 22-38 \times 2-3 μ .
- **subgrisea** Peck. On stems of *Solidago* sp.; Univ. Stem colored gray; spores up to 70 \times 2 μ .
- **Viburni-Opuli** Dearness & Bisby (71: 140). On twigs of *Viburnum Opulus*; Univ. 20-40 \times 1-1½ μ . Associated with *Didymella manitobiensis*, q.v.
- **Symphoricarpi**. This name inadvertently listed on p. 160 of "The Fungi of Manitoba," is a *nomen nudum*. The fungus on the twigs of *Symphoricarpos occidentalis*, Univ., has erumpent black pycnidia with obtuse, short ostioles; spores 36-66 \times 2 μ .

- Septoria Agropyri** Ell. & Ev. On *Agropyron Richardsonii*; Roblin, Man.; on *A. Smithii*; St. Norbert, Man. and Broadview, Sask.; on *A. tenerum*; Morden, Man., Margo and Saskatoon, Sask. 32-52 \times 2-3 μ .
- **alnifolia** Ell. & Ev. On *Alnus incana*; Birds Hill to Norway House and Valley River. 40-66 \times 2-3 μ .
- **Anemones** Desm. On *Anemone canadensis*; Brandon. 15-35 \times 1-2 μ .
- **Apii** (Bri. & Cav.) Chester. On *Apium graveolens*; Morden and Winnipeg. Spots large, with few pycnidia.
- **Apii-graveolentis** Dorogin. On leaves and petioles of *Apium graveolens*; Miami and Univ. Spots small, densely covered with pycnidia. Cochran (Phytopath. 21:115) considers this and *S. Apii* to be distinct. Both cause considerable injury, unless thorough spraying is practised.
- **argophylla** Ell. & Kellerm. On *Psoralea argophylla*; Brandon. Spores up to 70-90 \times 4 μ ; the original description gives spores 40-55 \times 2½-3½ μ .
- **Astragali** Rob. & Desm. On *Lathyrus maritimus*; Berens River, Man.; on *L. ochroleucus*; Fisher Branch, Man., Lake Waskesiu and St. Gregor, Sask.; on *L. venosus*; across Man. and at Naicam, Sask. All these collections have similar conspicuous, irregular spots on the leaves; but the spores in some specimens are only 40-70 μ long, in others they reach 200 μ . The spores are rather irregular, 2-4 μ wide.
- **atropurpurea** Peck. On *Aster cordifolius*, *A. laevis*, *A. Lindleyanus*, *A. novi-belgii*, *A. tataricus* and *A. spp.*; Berens River and across southern Man. Spots often purplish; spores 50-110 \times 2-4 μ .
- **aurea** Ell. & Ev. On *Ribes aureum*; Univ., Man. (det. J. J. Davis), Indian Head, Sask.
- **Avenae** Frank, stage of *Leptosphaeria avenaria*. On *Avena sativa*; Brandon, Man. and Saskatoon, Sask. 20-41 \times 3-4 μ .
- **bacilligera** Wint. On *Ambrosia trifida*; Oakville and Univ. 24-48 \times 1½-2 μ .
- **Besseyi** Peck. On *Fraxinus pennsylvanica*; Sifton and Univ. 35-50 \times 4-5 μ . See *Phyllosticta viridis*.
- **betulicola** Peck. On *Betula alba* var. *papyrifera*; Kenora. 50-65 \times 4 μ .
- **Boycei** Dearness. On seedlings of *Betula alba* var. *papyrifera* in a nursery; Dropmore. Spots reddish brown above, irregular; pycnidia epiphyllous; spores septate, 30-68 \times 2 μ .
- **Bromi** Sacc. Not common on *Bromus inermis*; Napinka, Man. and Indian Head, Sask. The specimens were found by I. L. Conners to have spores 24-64 \times 2 μ , mostly 4-celled; the spots are usually small, gray with dark margin, dotted by conspicuous pycnidia 80-200 μ long.
- **bromigena** Sacc. Common on *Bromus inermis*; across southern Man. and at Saskatoon, Swift Current and Vonda, Sask.; on *Elymus Macounii*, Margo, Sask. Mr. Conners found the spots on *Bromus* to be conspicuous, brown; pycnidia 105-185 \times 90-150 μ , substomatal; spores falcate, acute, granular, 19-31 \times 2½-3½ μ . The type was collected in North Dakota; see Brenckle, Fungi Dakotenses, 319.
- **Brunellae** Ell. & Holway. On *Prunella vulgaris*; Vivian. 45-70 \times 2 μ .
- **Callistephi** Gloyer. On *Callistephus chinensis*; Brandon and Morden. Spores in one specimen 42-52 \times 2-2½ μ .
- **Campanulae** (Lév.) Sacc. On *Campanula aparinoides*; Victoria Beach. 30-40 \times 2 μ .
- **canadensis** Peck. On *Cornus canadensis*; Victoria Beach. 25-40 \times 1 μ .
- **Cannabis** (Lasch.) Sacc. On *Cannabis* sp.; Morden. 25-40 \times 1-1½ μ .
- **Caraganae** (Jacq.) Diedeck. On *Caragana arborescens*; Indian Head, Sask. and Univ., Man.; on *C. spp.* cult.; Indian Head, Rosthern and Saskatoon, Sask. The affected leaves drop prematurely. This fungus was first found in western Canada by W. P. Fraser at Saskatoon and by B. J. Sallans at Indian Head in 1928, but was not seen in Man. until 1931, when it was conspicuous at the Univ., and it has persisted. Spots indefinite, brownish; pycnidia hypophyllous, c. 200 μ wide when mature; the spores issue as milky-white cirrhi, 34-48 \times 3-4 μ , becoming septate.
- **Caricis** Pass. On *Carex vesticaria*; Norway House. 35-40 \times 2-3 μ .
- **chrysanthemella** Sacc. On *Chrysanthemum maximum*; Morden and Univ. 40-70 (90) \times 2-3 μ . Grove (9) includes this with *P. Chrysanthemi* Allesch.

- Septoria Cirsii** Niessl. On *Cirsium arvense*; Southern Man. and at Indian Head, Sask. 50-90 \times 2½-3 μ .
- **Clematidis** Rob. & Desm. On *Clematis ligusticifolia*; Morden, Man.; on *C. sp.*; Indian Head and Rosthern, Sask. Spores 30-75 \times 2-3 μ , often narrower at one end. This may be *S. Jackmani* Ell. & Ev.
- **conspicua** Ell. & Martin. Common on *Steironema ciliatum*; Dauphin to Berens River and Univ., Man.; Indian Head, Sask. 32-54 \times 1-2 μ .
- **Convolvuli** Desm. On *Convolvulus arvensis*; Saskatoon, Sask.; on *C. sepium*, Univ., Man. 38-50 \times 1½-2 μ .
- **Coptidis** Berk. & Curt. On *Coptis triflora*; Victoria Beach. 18-22 \times 1 μ .
- **cornicola** Desm. On *Cornus instolonea*; Chamberlain, Sask.; on *C. stolonifera*; Dauphin and St. Adolphe, Man. 32-56 \times 2½-3 μ .
- **corylina** Peck. Common on *Corylus americana* across Man. Pycnidia in small circular or linear groups; spores 30-50 \times 2-3 μ .
- **?Cucurbitacearum** Sacc. On *Cucumis Melo*; Univ. 20-30 \times 3-4 μ .
- **Diervillae** Ell. & Ev. On *Diervilla lonicera*; Minaki. 35-45 \times 1-1½ μ .
- **divaricata** Ell. & Ev. On *Phlox Drummondii*; Brandon and Univ. The leaf-spot is sometimes injurious. 16-28 \times 1½ μ .
- **?Dracocephali** Thüm. On *Dracocephalum parviflorum*; Red Jacket, Sask. 50-70 \times 2-2½ μ .
- **?erigerontea** Sacc. (*S. Erigeronis* Peck). On *Erigeron canadensis*; Brandon and Carberry. 40-60 \times 1½ μ .
- **?flagellaris** Ell. & Ev. On *Convolvulus sepium*; Homewood, Univ. Spores long, 45-90 \times 2-3 μ . *S. flagellaris* was described as having spores 35-44 μ long, and according to Grove (9) is a synonym of *S. Convolvuli*.
- **flagellifera** Ell. & Ev. On *Pisum sativum*; Univ., Man.; Saskatoon, Sask. This species, apparently northern, has spores 78-150 \times 2½-3 μ .
- **Galeopsidis** Westend. On *Galeopsis tetrahit*; Norway House, Swan River. 25-44 \times 1-1½ μ .
- **Giliae** Dearness & Bisby (71: 141). On *Gilia linearis*; Reston; W. L. Gordon. Spots brown, extensive; pycnidia epiphyllous, 150-225 μ ; ostiole up to 30 μ wide; spores continuous, 45-70 \times 2-3 μ .
- **Glycyrrhizae** Ell. & Kellerm. On *Glycyrrhiza lepidota*; Lumsden, Sask.; det. I. L. Connors who reports that this is evidently the first Canadian record.
- **?Helenii** Ell. & Ev. On *Helenium autumnale*; Univ. 35-50 \times 2-2½ μ .
- **Helianthi** Ell. & Kellerm. On *Helianthus annuus*; Morden, Man. and Rosthern, Sask.; on *H. Maximiliana*; Univ., Man.; on *H. petiolaris* and *H. tuberosus*; Dauphin, Man. 50-85 \times 2-3½ μ .
- **increscens** Peck. On *Trientalis americana* (*T. borealis*); Berens River southeastward. 20-34 \times 1-1½ μ .
- **Lapparum** Sacc. On *Arctium minus* and *A. Lappa*; Univ. 19-27 \times 1-1½ μ .
- **?lepidicola** Ell. & Martin. On *Lepidium apetalum*; Morden.
- **Liatriidis** Ell. & Davis. On *Liatria aspera* (*L. scariosa*); Birds Hill. 60-70 \times 2½-3 μ .
- **Lychnidis** Desm. On *Lychnis chalcidonica*, *L. Haageana*, and *Silene noctiflora*; Morden and Univ. Spores up to 70 \times 3 μ , often with one septum. The fungus seems to fit Grove's (9) description. The spores are too long for *S. noctiflorae* Ell. & Kellerm.
- **Lycopersici** Speg. Often injurious to *Lycopersicum esculentum* in southern Man. 50-100 \times 3 μ .
- **malvicola** Ell. & Martin. On *Althaea rosea* and *Malva rotundifolia*; Morden and Univ. 34-56 \times 1½-3 μ .
- **menthicola** Sacc. & Letend. On *Mentha glabrior*; Brandon, Univ. and Victoria Beach, Man.; Prud'homme, Sask. Spores 30-40 \times 1½-2 μ . Grove (9) considers this synonymous with *S. Menthae* (Thüm.) Oudem.; others consider the latter to be a species with longer spores.
- **?Menyanthis** (Lib.) Desm. On *Menyanthes trifoliata*; Gimli, Man. Spores immature, 15-25 \times 1½-2 μ . This or a similar fungus was collected in a quantity at Clear Lake, but it too was unsatisfactory, and the fungus did not develop further in a moist chamber. Similar specimens were found at Pike Lake, Sask. Infected leaves, overwintered under natural conditions, probably would bear a mature stage.

- Septoria Mimuli** Ell. & Kellerm. On *Mimulus ringens* on the shores of Lake Winnipeg. Spots sometimes indefinite, sometimes with a definite darker border; spores $25-50 \times 1\frac{1}{2} \mu$.
- **musiva** Peck. Common on *Populus balsamifera* and cultivated hybrids such as "*P. Petrowskyana*" across Manitoba. Det. in part by J. J. Davis, who considers this a composite species. Spores about $40-65 \times 3-4 \mu$. See *S. populicola*.
- **Nabali** Berk. & Curt. On *Prenanthes alba*; Berens River and Woodfield. $20-30 \times 1-2 \mu$.
- **?narvisiana** Sacc. On *Scirpus ?validus*; Lake Dauphin. $40-50 \times 4 \mu$.
- **?nebulo**sa Rostr. On *Calamagrostis canadensis*; Carman; coll. J. H. Craigie. $10-14 \times 1-1\frac{1}{2} \mu$.
- **Negundinis** Ell. & Ev. On *Acer Negundo*; Stonewall and Univ., Man.; Indian Head, Sask.; on *A. interior*; Indian Head and Saskatoon, Sask. $32-50 \times 2\frac{1}{2}-3 \mu$.
- **nodorum** Berk. Common on leaves and glumes of *Triticum aestivum* in Man. and Sask. Conspicuous and sometimes injurious in wet years. $18-36 \times 3-4 \mu$.
- **Oenotherae** Westend. On *Oenothera biennis*; Clear Lake to Roblin, Man. and at Bethune, Sask. $25-35 \times 1\frac{1}{2}-2 \mu$.
- **Paeoniae** Westend. On *Paeonia albiflora*; Morden, Portage la Prairie and Univ., Man.; Indian Head, Sask. Spores $24-32 \times 2-2\frac{1}{2} \mu$. Grove (9) considers that var. *berolinensis* Allesch. "seems to differ from the type only in having concentric foldings in the leaf spot," a character scarcely shown by the specimens in Man.
- **Passerinii** Sacc. On *Hordeum jubatum* and *H. vulgare* across Man.; on *H. vulgare* at Saskatoon, Sask. $22-52 \times 2-3 \mu$.
- **pentstemonicola** Ell. & Ev. On *Pentstemon acuminatus*; Brandon. Spots indefinite; pycnidia $50-100 \mu$ with an incomplete wall; spores $30-75 \times 2-3 \mu$.
- **Physostegiae** Ell. & Ev. On *Physostegia virginiana*; Winnipeg Beach. $20-30 \times 1-1\frac{1}{2} \mu$.
- **Pisi** Westend. On *Pisum sativum*; Brandon and Morden, Man.; Indian Head and Swift Current, Sask. Spores $30-50 \times 2-4 \mu$, much shorter, and the spots less definite, than in *S. flagellifera*.
- **plantaginea** Pass. var. **Plantaginis-majoris** Sacc. On *Plantago major*; Oakville and Univ. Spores $23-35 \times 1-2 \mu$, smaller than in *S. plantaginea*.
- **Polygonorum** Desm. On *Polygonum Persicaria*; Gilbert Plains to Kenora.
- **?populicola** Peck. On *Populus angustifolia*; Indian Head, Sask.; on *P. balsamifera*; eastern Man., Lac Vert and Saskatoon, Sask. The various species of *Septoria* recorded on *Populus* are scarcely distinguishable. $55-84 \times 1\frac{1}{2}-4 \mu$.
- **psammophila** Sacc. On *Astragalus pectinatus*; Sutherland, Sask.
- **psilostega** Ell. & Martin. On *Galium boreale*; Univ.; on *G. triflorum*; Clear Lake. $40-60 \times 2-3 \mu$.
- **Ribis** Desm., stage of *Mycosphaerella Grossulariae* (Fr.) Lindau. Common on *Ribes floridum*, *R. Grossularia*, *R. nigrum* and *R. vulgare* in Man. and Sask. This fungus sometimes causes defoliation.
- **Rubi** Westend. On *Rubus idaeus* var. *strigosus* across Man.; on *R. melanolasius*; Beaver Creek, Sask.; on *R. triflorus*; Vivian, Man. Not found to be injurious.
- **Rudbeckiae** Ell. & Halsted. On *Rudbeckia laciniata*; Dauphin, Oakville and Valley River. $44-56 \times 1\frac{1}{2}-2 \mu$.
- **?salicina** Peck. On *Salix* sp.; Norway House. Immature.
- **sambucina** Peck. On *Sambucus ?racemosa*; Morden and Portage la Prairie. Spores $40-70 \times 3 \mu$, septate.
- **Scutellariae** Thüm. On *Scutellaria lateriflora*; Kenora. $40-70 \times 1-1\frac{1}{2} \mu$.
- **Secalis** Prill. & Delacr. On *Secale cereale*; Univ., Man. and Saskatoon, Sask. $30-40 \times 3 \mu$.
- **Shepherdiae** (Sacc.) Dearness. On *Shepherdia canadensis*; Birds Hill. The pycnidium wall is sometimes obsolete; spores $25-50 \times 2\frac{1}{2}-4 \mu$, multiseptate.
- **Sicyi** Peck. On *Echinocystis lobata*; Morris, Sifton and Univ.; det. J. J. Davis, who considers *S. Brencklei* Sacc. to be a synonym.
- **Sii** Rob. & Desm. On leaves and stems of *Sium cicutifolium*; Oakville and Victoria Beach. Spores $30-45 \times 1\frac{1}{2}-2 \mu$; on the stems they were found to reach 60μ .
- **solidaginicola** Peck. On *Solidago rigida* and *S. serotina*; Univ. $40-65 \times 2 \mu$.
- **Sonchi-arvensis** Dearness & Bisby (Mycologia, 20:238). Common on *Sonchus arvensis*; type collected at Univ.; found also at Minaki, Victoria Beach, Man., and Quill Lake, Sask. Spores $20-50 \mu$ long, commonly $2\frac{1}{2} \mu$ wide at one end, $1\frac{1}{2} \mu$ at the other.

- Septoria sonchifolia** Cooke. Rare on *Sonchus arvensis*; Univ. Spores only about $20\ \mu$ long.
- **Stachydis** Rob. & Desm. On *Stachys palustris*; Berens River and Univ. Spores $30-50 \times 1-2\ \mu$; in one collection they reached $80\ \mu$ in length.
- **Stellariae** Rob. & Desm. On *Stellaria media*; Minaki. $55-80 \times 1-1\frac{1}{2}\ \mu$.
- **Symphoricarpi** Ell. & Ev. On *Symphoricarpos occidentalis*; across Man. and at Indian Head, Invermay and Saskatoon, Sask. Distributed by Brenckle from North Dakota in Fungi Dakotenses, 272.
- **Thalictri** Ell. & Ev. On *Thalictrum* sp.; Kenora. $50-60 \times 1-1\frac{1}{2}\ \mu$.
- **Tritici** Desm. Fairly common on *Triticum aestivum* in Man. and Sask. $30-55 \times 1\frac{1}{2}-3\ \mu$.
- **Urticae** Desm. & Rob. On *Laportea canadensis* and *Urtica gracilis*; Univ. $40-60 \times 1\frac{1}{2}-2\ \mu$.
- **Veronicae** Rob. On *Veronica longifolia* (*V. maritima*); Morden. $30-50 \times 1\frac{1}{2}-2\ \mu$.
- **Violae** Westend. On *Viola* sp., Killarney and Minaki. $16-35\ (40) \times 1\frac{1}{2}\ \mu$.
- **Xanthii** Desm. On *Xanthium* sp.; Emerson and Lake Winnipeg; on *X. commune*; Winnipeg. Pycnidia numerous; leaf spots sometimes absent. $30-55 \times 2-3\ \mu$.
- **?Xylostei** Sacc. & Wint. On *Lonicera ?glaucescens*; Clear Lake. Spores $45-80 \times 2-3\ \mu$, larger than given for this species.
- Sphaerographium niveum** Dearness & House. Not uncommon in eastern Man. on fallen twigs of *Prunus*, *Ribes*, *Salix*, etc. The erect, slender, superficial pycnidia are white; spores $30-64 \times 2\frac{1}{2}-3\frac{1}{2}\ \mu$, narrowed at the ends, hyaline, guttate, becoming septate.
- Sphaeronema pruinosum** Peck. Common on branches of *Amelanchier alnifolia*; Univ. $16-22 \times 7-9\ \mu$.
- **?spinella** Kalchbr. One isolation from soil in Man. Pycnidia in culture with long "necks"; spores $2\frac{1}{2}-3 \times 1\ \mu$.
- Sphaeronemella Helvellae** Karst. On *Helvella infula* and *H. sphaerospora*; Minaki and Victoria Beach. Spores $8-11 \times 4\ \mu$; a re-examination shows that a few show indications of forming a septum, as Povah (13: 154) found in specimens from Isle Royale, Mich.
- Sphaeropsis albescens** Ell. & Ev. Common on twigs of *Acer Negundo*; Treesbank and Univ., Man.; Indian Head, Pike Lake and Saskatoon, Sask.; perhaps this species on *A. saccharinum*; Saskatoon, Sask. This fungus appears to cause considerable "die-back" of twigs or branches; they are whitened, then may be darkened by masses of spores. $16-24 \times 10-12\ \mu$.
- **Amorphae** Ell. & Barthol. On twigs of *Amorpha fruticosa*; Univ. $18-26 \times 9-11\ \mu$.
- **Coryli** Ell. & Ev. On branches of *Corylus* sp.; Univ. $18-24 \times 10\ \mu$.
- **fertilis** Peck. On twigs of *Fraxinus pennsylvanica*; Univ. Spores $23-30 \times 10-12\ \mu$.
- **Malorum** Peck, stage of *Physalospora obtusa* (Schw.) Cooke. On branches of *Pyrus baccata* or other species of *Pyrus* cultivated in Man. and Sask.; rare on leaves of apple. Probably this species also on branches of *Crataegus* sp. and *Prunus* spp. $18-28 \times 8-11\ \mu$.
- **Menispermii** Peck. On stems of *Menispermum canadense*; Univ., Winnipeg. $20-27 \times 9-11\ \mu$.
- **olivacea** Oth. On branches of *Tilia americana*; Univ.; associated with *Massariella Curreyi* (q.v.), of which Oth. regarded it the pycnidial stage. Petrak and Sydow have transferred it to *Melanconiopsis*. Spores $20-30 \times 9-12\ (16)\ \mu$.
- **?propullans** (Schw.) Peck (*S. celastrina* Peck). On stems of *Celastrus scandens*; Univ. $21-30 \times 9-11\ \mu$.
- **ribicola** Cooke & Ell. On twigs of *Ribes aureum* and *R. vulgare*; Univ. $19-26 \times 9-11\ \mu$.
- **Syringae** Peck & Clinton. On twigs of *Syringa vulgaris*; Univ. $19-24 \times 10-12\ \mu$.
- **ulmicola** Ell. & Ev. On twigs of *Ulmus americana*; Univ. Spores $20-27 \times 9-11\ \mu$, brown.
- **vitigena** Ell. & Ev. (perhaps the same as *S. fabaeformis* Sacc.). On twigs of *Vitis vulpina*; Univ. $14-26 \times 7-11\ \mu$.
- **zonata** Passer. (apparently). On twigs of *Lonicera tatarica*; Univ.; W. L. Gordon. $22-24 \times 10-11\ \mu$.
- Stagonospora albescens** J. J. Davis. On old leaves of *Carex ?vesicaria*; Norway House; verified by J. J. Davis. $55-65 \times 8-10\ \mu$.
- **Amorphae** Dearness & Bisby (Mycologia, 20: 235). On twigs of *Amorpha fruticosa*; Univ. $42-56 \times 4-6\ \mu$.
- **Atriplicis** (Westend.) J. Lind. On leaves of *Chenopodium album*, *C. capitatum* and *C. hybridum* across Man.; on *C. album* at Indian Head, Sask.? Spores usually $16-22 \times 4-8\ \mu$. In the specimen from Sask. they were $40-80 \times 3-4\ \mu$; this may be a distinct species not found to be described.

- Stagonospora Meliloti* (Lasch) Petrak (*Ascochyta Meliloti* (Trel.) J. J. Davis). Common on stems and leaves of *Melilotis alba* and *M. officinalis* across Man.; on *M. alba* at Indian Head, Sask.; probably this species on *Trifolium hybridum*; Watson and Saskatoon, Sask. This fungus sometimes causes severe injury to sweet clover. Gilman and Archer (8) include this and *Ascochyta Medicagois* under *Mycosphaerella leihalis* Stone; see also Horsfall, Cornell Univ. Memoir 130.
- *Petasitidis* Ell. & Ev. On leaves of *Petasites palmatus*; Clear Lake and Victoria Beach. Spores $30-55 \times 5-6 \mu$, hyaline, granular, becoming 3-4-celled.
- *Smilacis* (Ell. & Martin) Sacc. On leaves of *Smilax herbacea*; Univ.; det. J. J. Davis. Spores $13-22 \times 4-7 \mu$, becoming 3-5-celled and finally brownish.
- Wojnowicia graminis* (McAlpine) Sacc. & D. Sacc. On *Triticum aestivum*; Humboldt and Senlac, Sask. Inoculations at Saskatoon proved it to be a weak parasite of *Bromus pumpe-lianus*, *Hordeum vulgare* and *Triticum aestivum*.

DERMATOPHYTES

- Achorion Schoenleinii* (Lebert) Remak. Isolated from five cases of favus capitis of immigrants. Apparently does not spread in Man.
- *violaceum* Bloch. Isolated from four members of one family of immigrants from Poland with tinea capitis. Does not appear to have spread in Man.
- Endomycopsis albicans* (Vuill.) Dekker. Occasional on man in Man.
- Epidermophyton cruris* A. Cast. From five cases of ringworm of the epidermis of man.
- Microsporon Audouini* Gruby. From 54 cases of tinea of children in Man.
- *felineum* Fox & Blaxall. Isolated from 49 children in Man.; also present on cats and dogs, from which children often contract infection.
- *pubescens* Sabour. Also common on children in Man., and considered only a variety of the preceding (see 116).
- Pityrosporon Malassezi* Sabour. In scales from the scalp of nearly every adult patient examined in Man.
- Trichophyton album* Sabour. Relatively common on man in Man.
- *gypseum* Bodin. Ten records, all from rural districts in Man.
- *interdigitale* Priestley. From cases of ringworm of the feet of man in Man.

XVI. APPENDIX

The following records have been added during 1937. Dr. Gordon's accurate list of species of *Fusarium*, verified by Drs. Wollenweber and Sherbakoff, now totals 26 distinct species and 46 entries, including varieties and forms. The corresponding figures for the world in Wollenweber and Reinking are 65 and 143. This means that 40% of the species recorded for the world, and 32% of all forms, etc., are known in Man. and Sask. This is a striking example of the wide distribution of fungi.

- Mycosphaerella Tassiana* (de Not.) Johans. On *Scirpus validus*, Pike Lake, Sask.
- Thecaphora cuneata* (Scotfield) G. P. Clinton. A smut on *Grindelia squarrosa*, presumably this species, is reported for Man. by T. Johnson.
- Fomes Ellisianus* F. W. Anderson. On *Shepherdia argentea*, Saskatoon, Sask.
- *roseus* (Alb. & Schw.) Cooke. On conifer, Keewatin, western Ont.; Sept. 1932; coll. M. Timonin. Reported by Dr. Mounce and Miss Macrae (Can. J. Research, 15, C: 154-161, 1937).
- Geaster asper* (Mich.) Lloyd. On the ground, Indian Head, Sask.
- Lycoperdon pusillum* Batsch. On soil in a wheat field, Muenster, Sask.
- Cadophora fastigiata* Lagerb. & Melin. From soil in Man.; comm. J. E. Machacek.
- ?*Melinii* Nannf. In soil in Man.
- Candida variabilis* (Lindner) Berkh. In soil in Man.
- Dematium pullulans* de Bary. Fungi of this type (*Pullularia* spp.) in soil in Man.
- Fusarium angustum* Sherb. From basal parts of *Hordeum vulgare* and soil in Man.
- *concolor* Reinking. From soil at Indian Head, Sask.

Fusarium conglutinans Wollenw. var. *Betae* Stewart. In basal parts of cereals and in soil in Man.

— *lactis* Pir. & Rib. From basal parts of wheat and soil at Winnipeg; first record on cereals.

— *sambucinum* Fuckel form 1 Wollenw. From soil, Winnipeg.

— *Scirpi* Lamb. & Fautr. var. *compactum* Wollenw. From wheat in Man.

— *Scirpi* var. *caudatum* Wollenw. In soil in Man.

Oidiodendron griseum Robak. In soil in Man.

Streptothrix Mounceae Sumstine (Mycologia, 29: 250). On bark, Kenora.

Phoma glomerata (Corda) Wollenw. & Hochapfel. In soil in Man.

Septoria Commonsii Ell. & Ev. On *Cirsium* in Man.

XVI. HOST INDEX

Fungi listed directly under a host are apparently parasites, and usually are found on living leaves, stems, etc. In many cases there follows a list under subheadings as follows: "twigs," referring usually to dead but not decorticated smaller branches of trees or larger shrubs. The fungi were doubtless in some cases parasitic at first. "Branches" is used generally to cover dead woody parts of shrubs. "Bark" refers to that of logs, trunks, or larger branches; the fungi recorded are presumed to be saprophytes. "Wood" refers usually to decorticated logs, stumps, branches, chips, etc., but certain Polyporaceae are included even though the fruit-bodies are formed outside the bark. "Catkins," "fruits," "seeds," "old leaves," etc., are sometimes listed, and refer to fungi on these parts after falling to the ground. "Stems" refers to dead stems of herbaceous plants.

Certain hosts, such as *Populus*, *Triticum* and *Symphoricarpos*, have been examined rather carefully for fungi; others but little, and many hosts are not included in the Host Index because no fungus has as yet been recorded on them on Man. or Sask.

The sources of names of hosts are given in Section I above. Hosts infected by inoculation are not included in the Host Index. When two or more species of hosts in alphabetical sequence have the same fungi recorded, the names of the fungi are not repeated. Query marks applying to hosts or fungi are nearly all omitted in the Host Index.

Abies balsamea (L.) Mill.

Lophodermium Piceae

Melampsora Abieti-capraearum

Pucciniastrum Goeppertianum

Uredinopsis mirabilis

U. Struthiopteridis

twigs: *Amphisphaeria incrustans*

Ascocalyx Abietis

Corticium galactinum

Dasyscypha Agassizii

Marasmius campanellus

Scolecconectria balsamea

bark: *Caldesiella viridis*

Coniophora olivacea

Tremella saccharina var. *foliacea*

wood: *Corticium bicolor*

C. pelliculare

C. subcoronatum

Fomes pinicola

F. subroseus

Glonium stellatum

Hymenochaete tenuis

Hypochnus fumosus

H. umbrinus

Oxydontia alborivide

Peniophora alutaria

Abies balsamea (L.) Mill.—*Con.*

P. piceina

Physarum contextum

Polyporus Schweinitzii

Acer Ginnala Maxim., cult.

Rhytisma acerinum

Acer interior Britt.

Piggotia Negundinis

Septoria Negundinis

Acer Negundo L., native and cult

Fusarium lateritium

Phyllosticta Negundinis

Piggotia Negundinis

Septoria Negundinis

twigs: *Camarosporium Negundinis*

Cytospora annulata

Diplodia atrata

Fenestella phaeospora

Lophiostoma quadrinucleatum

L. triseptatum

Microdiplodia subtecta

Nectria cinnabarina

Phoma fumosa

Schizoxylon compositum

Sphaeropsis albescens

Teichospora clavispora

Acer Negundo L., native and cult.—*Con.**twigs*: Tubercularia vulgaris*bark*: Diatrype hochelagae

Eutypa ludibunda

Hypocrea rufa

Libertella acerina

Peniophora longispora

Stereum cinerascens

wood: Bertia moriformis

Coniophora suffocata

Corticium fenestratum

Daedalea unicolor

Favolus canadensis

Fomes connatus

F. scutellatus

Fusarium reticulatum var. Negundinis

F. sambucinum

F. Scirpi var. acuminatum

F. sporotrichioides

Guepinia elegans

Hypochnus umbrinus

Lasiosphaeria hirsuta

Mollisia cinerea

Odontia arguta

O. setigera

Otthia Hypoxylon

Peniophora guttulifera

Pholiota albocrenulata

P. spectabilis

Pleurotus elongatipes

P. septicus

P. ulmarius

Polyporus elegans

P. gilvus

P. resinosus

P. tulipiferus

Poria ferruginosa

Radulum spatulatum

Rosellinia mammiformis

Steecherinum septentrionale

samarae: Phoma negundinicola**Acer saccharinum** L., cult.

Rhytisma acerinum

Sphaeropsis albescens

Acer spicatum Lam.

Gloeosporium tremellinum

Phleospora canadensis

Phyllosticta minima

P. minutissima

Rhytisma punctatum

Uncinula circinata

Achillea millefolium L.

Entyloma Achilleae

Pleospora megalotheca

Puccinia millefolii

Actaea alba (L.) Mill.**Actaea rubra** (Ait.) Willd.

Puccinia rubigo-vera var. Agropyri

Ramularia Actaeae

Actaea rubra var. *neglecta* (Gillman) B. L.

Robinson

Ramularia Actaeae

Aegilops cylindrica Host, cult.

Puccinia glumarum

Agaricaceae: see also **Coprinus** and **Russula**

Dactylium dendroides

Mycogone cervina

Sepedonium chrysospermum

Sporodinia grandis

Agastache Foeniculum (Pursh) O. Kuntze

Sphaerotheca Humuli var. fuliginea

Agoseris glauca (Pursh) Steud.

Puccinia extensicola var. hieraciata

P. Hieracii

Agrimonia gryposepala Wallr.

Pucciniastrum Agrimoniae

Agropyron cristatum J. Gaertn., cult.

Claviceps purpurea

Puccinia graminis

Pythium arrhenomanes var. canadensis

Agropyron dasystachyum (Hook.) Scribn.

Claviceps purpurea

Epichloe typhina

Puccinia graminis

P. montanensis

P. rubigo-vera var. Agropyri

Agropyron Griffithsii Scribn. & Smith, cult.

Puccinia graminis

Agropyron repens (L.) Beauv.

Claviceps purpurea

Erysiphe graminis

Puccinia graminis

P. montanensis

Pythium arrhenomanes var. canadensis

Scolecotrichum graminis

Agropyron Richardsonii Schrad.

Puccinia graminis

P. montanensis

P. rubigo-vera var. Agropyri

Septoria Agropyri

Agropyron Smithii Rydb.

Ascochyta graminicola

Bacterium Agropyri

Claviceps purpurea

Epichloe typhina

Puccinia graminis

P. montanensis

P. rubigo-vera var. Agropyri

Scolecotrichum graminis

Septoria Agropyri

Agropyron tenerum Vasey, native and cult.

Claviceps purpurea

Colletotrichum graminis

Agropyron tenerum Vasey, native and cult.—*Con.*

Nigrospora sphaerica
 Phyllachora graminis
 Puccinia coronata
 P. graminis
 P. montanensis
 P. rubigo-vera var. Agropyri
 Pythium arrhenomanes var. canadensis
 Septoria Agropyri
 Ustilago bromivora

Agropyron spp.

See Ophiobolus graminis
 Puccinia glumarum
old stems: AcrospERMUM compressum

Agrostis alba L., native and cult.

Puccinia graminis

Agrostis hyemalis (Walt.) B. S. P.

Phyllachora graminis
 Puccinia graminis
 P. Liatridis

Alisma Plantago-aquatica L.

Doassansia Alismatis
 Physoderma maculare
 Rhynchosporium Alismatis

Allium Cepa L., cult.

Botrytis Allii
 Colletotrichum circinans
 Peronospora Schleideniana
 Urocystis Cepulae

Allium textile A. Nels. & Macbr.

Puccinia granulispora

Alnus incana (L.) Moench

Frankiella Alni
 Microsphaera Alni
 Ophiodothis alneum
 Phyllactinia corylea
 Septoria alnifolia
 Taphrina Alni-incanae

branches: Bertia moriformis

Cyphella fasciculata
 Daedalea unicolor
 Daldinia concentrica
 Diatrypella placenta
 Eutypella cerviculata
 Fomes ignarius
 Hymenochaete badioferruginea
 Hypoxylon fuscum
 H. Morsei
 Melanconis marginalis
 M. thelebola
 Merulius niveus
 Odontia setigera
 Peniophora aurantiaca
 Polyporus tulipiferus
 Torula alnea
 Tremella lutescens

Alnus incana (L.) Moench—*Con.*

branches: Trogia crispa
 Valsa ambiens
 Valsaria moroides
catkins: Ciboria amentacea
 Sclerotinia Alni

Alopecurus geniculatus L., var. *aristulatus* Torr.

Uromyces Alopecuri

Alopecurus pratensis L.

Puccinia graminis

Althaea rosea L., cult.

Ascochyta parasitica
 Cercospora althaeina
 Phyllosticta althaeicola
 Plenodomus Meliloti
 Puccinia Malvacearum
 Sclerotinia sclerotiorum
 Septoria malvicola
old stems: Sclerotium deciduum

Althaea sp. cult.

Erysiphe Cichoracearum

Amaranthus retroflexus L.

Albugo Bliti
 Alternaria Amaranthi
 A. Solani

Ambrosia psilostachya DC.

Albugo Tragopogonis
 Plasmopara Halstedii
 Puccinia Xanthii

Ambrosia trifida L.

Entyloma Compositarum
 Erysiphe Cichoracearum
 Puccinia Xanthii
 Septoria bacilligera

Amelanchier alnifolia Nutt.

Apiosporina Collinsii
 Cytospora leucostoma
 Entomosporium maculatum
 Gymnosporangium clavariiforme
 G. clavipes
 G. corniculans
 G. juvenescens
 G. Nelsoni
 Hendersonia Mali
 Monilia Amelanchieris
 Phyllosticta innumerabilis
 Podosphaera Oxyacanthae
 Trichosporium parasiticum

branches: Calonectria Dearnessii

Corticium septentrionale
 Cryptosphaeria fissicola
 Diaporthe tuberculosa
 Diatrype stigma
 Diatrypella quercina
 Fomes scutellatus
 Hymenochaete agglutinans

Amelanchier alnifolia Nutt.—*Con.*

branches: Hypoxylon fuscum

Karschia lignyota
Massaria Pyri
Peniophora cinerea
Pleospora pustulans
Polyporus planellus
P. semipileatus
P. tulipiferus
Sphaeronema pruinsum
Valsa leucostoma

old leaves: Lophodermium tumidum

Amorpha canescens Pursh

Cercospora passaloroides
Uropyxis Amorphae

Amorpha fruticosa L.

Uropyxis Amorphae

branches: Camarosporium Amorphae

Curcubitaria elongata
Diaporthe Amorphae
Diatrype tumida
Diplodia Amorphae
Pleomassaria siparia
Sphaeropsis Amorphae
Stagonospora Amorphae

Amorpha nana Nutt.

Uropyxis Amorphae

Amphicarpa monoica (L.) Eil.

Cercospora monoica
Erysiphe Polygoni
Synchytrium aecidioides

Andromeda polifolia L.

Rhytisma Andromedae

Andropogon furcatus Muhl.

Sphacelotheca occidentalis

Andropogon scoparius Michx.

Puccinia Andropogonis var. Pentstemonis
P. Ellisiana

Anemone canadensis L.

Didymaria didyma
Plasmopara pygmaea
Puccinia Anemones-virginianae
P. Magnusiana
Septoria Anemones

Anemone cylindrica Gray

Phleospora Anemones
Puccinia rubigo-vera var. Agropyri

Anemone globosa Nutt.

Puccinia rubigo-vera var. Agropyri

Anemone patens L. var. *Wolfgangiana*

(Besser) Koch
Puccinia Pulsatillae
Tranzschelia suffusa
Urocystis Anemones

Antirrhinum majus L., cult.

Phyllosticta Antirrhini
Puccinia Antirrhini

Aphididae (insects)

Empusa Aphidis

Aphodius fimetarius (insect)

Beauveria Bassiana

Apium graveolens L., cult.

Bacillus carotovorus
Cercospora Apii
Septoria Apii
S. Apii-graveolentis

Aplopappus spinulosus (Pursh) DC.

Puccinia Grindeliae

Apocynum androsaemifolium L.

Cercospora Apocyni

Apocynum cannabinum L.

Cylindrosporium Apocyni

Apocynum scopulorum Greene

Cylindrosporium Apocyni
C. sibiricum

Apocynum sibiricum Jacq.

Cercospora Apocyni
Cylindrosporium sibiricum
Septogloeum Apocyni

Aquilegia sp. cult.

Marssonina Aquilegiae

Arabis brachycarpa (Torr. & Gray) Britt.

Puccinia monoica

Arabis glabra (L.) Bernh.

Albugo candida

Arabis ovata (Pursh) Poir**Arabis retrofracta** Grah.

Puccinia monoica

Aralia nudicaulis L.

Cylindrosporium leptospermum
Nyssopsora clavellosa

Arceuthobium americanum Nutt.

Wallrothiella Arceuthobii

Arctium Lappa L.

Phyllosticta Lappae
Septoria Lapparum

Arctium minus Bernh.

Puccinia Bardanae
Septoria Lapparum

old stems: Peniophora cinerea

Pistillaria micans

Arctostaphylos rubra (Rehder & Wilson)

Fernald

Pucciniastrum sparsum

Arctostaphylos uva-ursi (L.) Spreng.

Chrysomyxa Arctostaphyli
Exobasidium Vaccinii

old leaves: Sphaeropezia Vaccinii

Arenaria lateriflora L.

Puccinia Arenariae

Argentina: see *Potentilla***Artemisia biennis** Willd.

Albugo Tragopogonis
Peronospora Artemisiae-biennis

Artemisia biennis Willd.—*Con.*

Puccinia atrofusca

old stems: Leptosphaeria pyrenopezizoides

Ophiobolus acuminatus

O. fulgidus

Artemisia camporum Rydb.

Puccinia atrofusca

Artemisia cana Pursh

Puccinia Absinthii

Artemisia frigida Willd.

Puccinia Absinthii

P. millefolii

Artemisia glauca Pallas

Puccinia atrofusca

Artemisia gnaphalodes Nutt.

Cylindrosporium Artemisiae

Puccinia Absinthii

P. atrofusca

Artemisia Purshiana Besser

Puccinia atrofusca

Artemisia sp.

Erysiphe Cichoracearum

Peronospora sulfurea

old stems: Phoma nebulosa**Asclepias syriaca** L.

Cercospora clavata

Phyllosticta cornuti

Asclepias sp.

Colletotrichum fusarioides

Asparagus officinalis L. cult.

Botrytis cinerea

Puccinia Asparagi

Asplenium: see *Athyrium***Aster cordifolius** L.

Cercospora cana

Coleosporium Solidaginis

Puccinia Asteris

Septoria atropurpurea

Aster ericoides L.

Coleosporium Solidaginis

Aster laevis L.

Coleosporium Solidaginis

Entyloma Compositarum

Puccinia Asteris

Septoria atropurpurea

Aster lateriflorus (L.) Britt.

Coleosporium Solidaginis

Aster Lindleyanus Torr. & Gray

Coleosporium Solidaginis

Erysiphe Cichoracearum

Puccinia Asteris

Septoria atropurpurea

Aster multiflorus Ait.

Puccinia Asteris

P. extensicola var. Asteris

Aster novae-angliae L.

Coleosporium Solidaginis

Erysiphe Cichoracearum

Puccinia Asteris

Ramularia Asteris

Aster novi-belgii L.

Septoria atropurpurea

Aster paniculatus Lam.**Aster salicifolius** Ait.

Coleosporium Solidaginis

Aster tataricus L., cult.

Septoria atropurpurea

Aster umbellatus Mill.

Coleosporium Solidaginis

Aster spp., *old stems*

Dasyscypha sulfurea

Leptosphaeria doliolum

Montagnella Heliopsisidis

Ophiobolus fulgidus

Phialea cyathoides

Astragalus adsurgens Pall.

Physalospora aurantia

Astragalus alpinus L.**Astragalus bisulcatus** Gray

Physalospora megastoma

Astragalus canadensis L.

Peronospora Astragali

Astragalus goniatus Nutt.

Physalospora aurantia

Astragalus pectinatus Dougl.

Phoma Astragali

Physalospora aurantia

Septoria psammophila

Athyrium Filix-femina (L.) Roth

Uredinopsis Struthiopteridis

Atriplex sp.

Cercospora dubia

Puccinia Aristidae

Avena fatua L.

Claviceps purpurea

Helminthosporium Avenae

Puccinia coronata

P. graminis

Pythium arrhenomanes var. canadensis

Ustilago levis

Avena Hookeri Scribn., cult.

Claviceps purpurea

Avena nuda L., cult.

Puccinia graminis

Avena sativa L., cult.

Bacterium striaefacies

Claviceps purpurea

Colletotrichum graminicola

Fusarium arthrosporioides

F. avenaceum

F. bulbigenum

F. bulbigenum var. Lycopersici

Avena sativa L., cult.—*Con.*

- F. culmorum
- F. Equiseti
- F. oxysporum
- F. oxysporum var. aurantiacum
- F. Poae
- Helminthosporium Avenae
- H. geniculatum
- H. sativum
- Leptosphaeria avenaria
- Olpidiaster radialis
- Pseudomonas coronafaciens
- Puccinia coronata
- P. graminis
- Pythium arrhenomanes var. canadensis
- P. volutum
- Septoria Avenae
- Ustilago Avenae
- U. levis

old parts: Bullera alba
 Gelasinospora cerealis
 Leptosphaeria culmicola

Axyris amaranthoides L.

old stems: Diplodina Ellisii

Azalea sp. cult.

Exobasidium Vaccinii

Beckmannia Syzigachne (Steud.) Fern.

- Colletotrichum graminicola
- Erysiphe graminis
- Puccinia coronata
- P. graminis
- Ustilago striiformis

Berberis aquifolium Pursh, cult.

Puccinia graminis

Berberis Thunbergii DC., cult.

old stems: Cucurbitaria Berberidis

Berberis vulgaris L., cult.

- Phyllosticta Berberidis
- Puccinia graminis
- old stems:* Cucurbitaria Berberidis
- Leptosphaeria Berberidis
- Phoma berberidella

Beta vulgaris L., cult.

- Cercospora beticola
- Phoma Betae
- Phyllosticta Betae

Beta vulgaris var. *cicla* L., cult.

Peronospora Schachtii

Betula alba L., var. *papyrifera* (Marsh.)

- Spach
- Cladosporium caducum
- Fomes fomentarius
- F. igniarius
- Gloeosporium Betulae-papyriferae
- Melanconium parvulum
- Phyllactinia corylea
- Phyllosticta Betulae

Betula alba L., var. *papyrifera* (Marsh.)

Spach—*Con.*

- Septoria betulicola
- S. Boycei
- twigs:* Coniothecium betulinum
- Diatrype stigma
- Diatrypella decorata
- Libertella betulina
- Melanconis decoraensis
- Melanconium parvulum
- Steganosporium Fautreyi
- Torula alnea
- Tremella lutescens
- bark:* Hypoxylon multifforme
- Hysterium pulicare
- Lachnum bicolor
- Naematelia nucleata
- Panus violaceofulvus
- Solenia anomala

wood: Arachnopeziza aurelia

- Calocera cornea
- Corticium pelliculare
- Daedalea unicolor
- Favolus canadensis
- Fomes igniarius var. nigricans
- Helotium citrinum
- Hypochnus coriarius
- H. pallidofulvus
- Lasiochaeria ovina
- Leicographa franconia
- Lentinus cochleatus
- Lenzites betulina
- Merulius tremellosus
- Panus rudis
- P. stypticus
- Paxina hispida
- Peniophora aurantiaca
- P. cinerea
- Phlebia strigosozonata
- Pleurotus petaloides
- P. serotinus
- Polyporus albellus
- P. arcularius
- P. betulinus
- P. brumalis
- P. nidulans
- P. pargamenus
- Porothelium fimbriatum
- Schizophyllum commune
- Steccherinum pulcherrimum
- S. septentrionale
- Stereum fasciatum
- S. hirsutum
- S. purpureum
- S. rugosiusculum
- Trogia crispa
- Tulasnella Eichleriana

- Betula alba** L., var. **papyrifera** (Marsh.)
 Spach—*Con.*
calkins: *Ciboria* sp.
seeds: *Sclerotinia Betulae*
Betula fontinalis Sargent
Fomes igniarius
Betula sp.
Melampsoridium betulinum
Microsphaera Alni
Fomes pinicola
branches: *Daldinia occidentalis*
Bidens cernua L.
Septocylindrium concomitans
Bidens frondosa L.
Cercospora umbrata
Plasmopara Halstedii
Septocylindrium concomitans
Sphaerotheca Humuli var. *fuliginea*
Bidens glaucescens Greene
Sphaerotheca Humuli var. *fuliginea*
Bidens vulgata Greene
Septocylindrium concomitans
Blitum: see **Chenopodium**
Boletus spp.
Sepedonium chrysospermum
Sporodinia grandis
Bouteloua curtipendula (Michx.) Torr.
Bouteloua gracilis (H.B.K.) Lag.
Puccinia vexans
Bouteloua oligostachya (Nutt.) Torr.
Helminthosporium sp.
Brassica arvensis (L.) O. Kuntze
Albugo candida
Alternaria Brassicae
Peronospora Brassicae
Brassica juncea (L.) Cosson
Albugo candida
Peronospora Brassicae
Brassica oleracea L. var. **botrytis** L., cult.
Alternaria Brassicae
Bacillus carotovorus
Phoma lingam
Brassica oleracea var. **capitata** L., cult.
Alternaria Brassicae
Bacillus carotovorus
Phoma lingam
Rhizoctonia Solani
Sclerotinia sclerotiorum
Brassica Napobrassica Mill., cult.
Rhizoctonia Solani
Brassica Rapa L., cult.
Alternaria Brassicae
Briza maxima L.
Fusarium culmorum
Puccinia graminis
- Bromus ciliatus** L.
Puccinia coronata
P. rubigo-vera var. *Agropyri*
P. rubigo-vera var. *agropyrina*
Ustilago bromivora
Bromus hordeaceus L.
Puccinia graminis
Bromus inermis Leyss., cult. and escaped
Claviceps purpurea
Fusarium culmorum
F. Equiseti
F. Poae
Helminthosporium Bromi
Nigrospora sphaerica
Pythium arrhenomanes var. *canadensis*
Septoria Bromi
S. bromigena
old stems: *Leptosphaeria culmifraga*
Pleospora Harknessii
Pyrenophora Bromi
Bromus latiglumis (Shear) Hitchc.
Puccinia rubigo-vera var. *agropyrina*
Bromus Porteri (Coulter) Nash
Puccinia coronata
P. rubigo-vera var. *Agropyri*
Bromus purgans L.
Puccinia rubigo-vera var. *agropyrina*
Bromus Pumpellianus Scribn.
Claviceps purpurea
Puccinia coronata
P. graminis
P. rubigo-vera var. *Agropyri*
Bromus sitchensis Trin., cult.
Puccinia graminis
Bromus sp.: *old tissues*
AcrospERMUM compressum
Sordaria fimicola
Bursa: see **Capsella**
Calamagrostis canadensis (Michx.) Beauv.
Phyllachora graminis
Puccinia coronata
Septoria nebulosa
Calamagrostis elongata Rydb.
Puccinia coronata
Calamagrostis inexpansa Gray
Epichloe typhina
Puccinia coronata
Calamagrostis sp.
Claviceps purpurea
Calamovilfa longifolia (Hook.) Hack.
Puccinia amphigena
Calla palustris L.
Cercospora Callae
Callistephus chinensis Nees, cult.
Coleosporium Solidaginis
Fusarium conglutinans var. *Callistephi*
Septoria Callistephi

- Caltha palustris** L.
Erysiphe Polygoni
Puccinia Calthae
P. calthicola
- Camelina microcarpa** Andr.
Albugo candida
Peronospora Camelinae
- Camnula pellucida** (Scud.) (insect)
Empusa Grylli
- Campanula aparinoides** Pursh
Septoria Campanulae
- Cannabis** sp. cult.
Septoria Cannabis
- Cantharellus**: see Agaricaceae
- Capnoides**: see Corydalis
- Capsella Bursa-pastoris** (L.) Medic.
Albugo candida
Peronospora parasitica
- Caragana arborescens** Lam.
Fusarium avenaceum
F. Solani
Septoria Caraganae
branches: Camarosporium Caraganae
Cucurbitaria Caraganae
Polyporus tulipiferus
Stictis fusca
Tubercularia vulgaris
- Carex aquatilis** Wahlenb.
Cintractia Caricis
- Carex atherodes** Spreng.
Cintractia Caricis
Puccinia Caricis-Shepherdiae
Urocystis Fischeri
- Carex Douglasii** Boott
Puccinia atrofusca
- Carex durifolia** Bailey
Puccinia Caricis var. grossulariata
- Carex filifolia** Nutt.
Cintractia externa
Puccinia atrofusca
- Carex gynocrates** Wormsk.
- Carex heliophila** Mackenzie
Cintractia Caricis
- Carex lanuginosa** Michx.
Cintractia subinclusa
Puccinia Caricis-Shepherdiae
- Carex limosa** L.
- Carex obtusata** Lilj.
Cintractia Caricis
- Carex praeegracilis** Boott
Puccinia atrofusca
- Carex Sartwellii** Dewey
Puccinia extensicola var. Oenotherae
- Carex Sprengelii** Dewey
Puccinia extensicola var. hieraciata
- Carex substricta** (Kukenth.) Mackenzie
Cintractia Caricis
Puccinia Caricis-Shepherdiae
- Carex varia** Muhl.
Ascochyta teretiuscula
- Carex vesicaria** L.
Phyllosticta Caricis
Puccinia Caricis var. urticata
P. Caricis-Shepherdiae
Septoria Caricis
Stagonospora albescens
- Carex** spp.
Cercospora Caricis
Puccinia extensicola var. Asteris
P. extensicola var. Solidaginis
dead parts: Cryptosporium nubilosum
Metasphaeria cumana
Peniophora Sambuci
- Castilleja coccinea** (L.) Spreng.
Ramularia coccinea
old stems: Ophiobolus acuminatus
- Castilleja sessiliflora** Pursh
Puccinia Andropogonis var. micropuncta
- Celastrus scandens** L.
Phyllactinia corylea
Phyllosticta spermoides
Ramularia Celastri
branches: Cytospora ambiens
Diatrype Celastri
Dinemasporium Robiniae
Fomes scutellatus
Hysterium insidens
Nectria cinnabarina
Polyporus tulipiferus
Sphaeropsis propullans
Valsa ambiens
- Chaetochloa**: see *Setaria*
- Chamaedaphne calyculata** (L.) Moench
Chrysomyxa Cassandrae
Gloeosporium Chamaedaphnis
Venturia pulchella
- Chamaenerion**: see *Epilobium*
- Chamaesyce**: see *Euphorbia*
- Cheirinia**: see *Erysimum*
- Chenopodium album** L.
Cercospora dubia
Peronospora variabilis
Puccinia Aristidae
Stagonospora Atriplicis
Urophlyctis pulposa
old stems: Diplodina Ellisii
Phoma longissima
- Chenopodium capitatum** (L.) Asch.
Stagonospora Atriplicis
- Chenopodium glaucum** L.
Urophlyctis pulposa

- Chenopodium hybridum** L.
Stagonospora Atriplicis
- Chickens**
Aspergillus fumigatus
Rhizopus rhizopodiformis
- Chimaphila umbellata** (L.) Nutt.
Mycosphaerella chimaphilina
- Chrysanthemum maximum** Ramond, cult.
Septoria chrysanthemella
- Chrysanthemum** sp. cult.
Erysiphe Cichoracearum
- Chrysopsis hirsutissima** Greene
Puccinia Stipae
- Cicuta occidentalis** Greene
Puccinia Cicutae
Uromyces Scirpi
- Circaea alpina** L.
Puccinia Circaeae
- Cirsium arvense** (L.) Scop.
Albugo Tragopogonis
Sclerotinia sclerotiorum
Septoria Cirsii
old stems: Mollisia atrocineria
Ophiobolus porphyrogonus
Phialea cyathoides
Pyrenochaete erysiphoides
- Cirsium Flodmanii** (Rydb.) Arth.
Puccinia Cirsii
Uromyces Junci
- Cirsium megacephalum** (Gray) Cockerell
Uromyces Junci
- Cirsium muticum** Michx.
Puccinia Cirsii
- Cirsium undulatum** (Nutt.) Spreng.
Puccinia Cirsii
Uromyces Junci
- Citrullus vulgaris** Schrad. cult.
Trichothecium roseum
- Clavaria** spp.
Helminthosphaeria Clavariarum
Scoleotrichum Clavariarum
Sporodinia grandis
- Clematis ligusticifolia** Nutt., native and cult.
Cercospora squalidula
Cylindrosporium Clematidis
Puccinia rubigo-vera var. Agropyri
Septoria Clematidis
- Clintonia borealis** (Ait.) Raf.
Puccinia mesomajalis
- Collomia**: see *Gilia*
- Comandra livida** Richards.
Cronartium Comandrae
Puccinia Comandrae
- Comandra pallida** A. DC.
Cercospora Comandrae
Cronartium Comandrae
- Comandra pallida** A. DC.—*Con*.
Puccinia Andropogonis var. pustulata
P. Comandrae
- Comandra umbellata** (L.) Nutt.
Puccinia Andropogonis var. pustulata
- Comarum**: see *Potentilla*
- Convolvulus sepium** L.
Puccinia Convolvuli
Ramularia sepium
Septoria Convolvuli
S. flagellaris
old stems: Leptosphaeria dolium
Pistillaria micans
Trinacrium subtile
- Coprinus** spp.
Chondromyces crocatus
- Coptis triflora** (L.) Salisb.
Septoria Coptidis
- Corallorrhiza** sp., *old stems*:
Colletotrichum Dematium
- Cornus canadensis** L.
Glomerularia Corni
Phyllosticta Corni-canadensis
Puccinia porphyrogenita
Septoria canadensis
- Cornus instolonea** A. Nels.
Phyllactinia corylea
Septoria cornicola
branches: Cryptosporiopsis cornina
Valsa cornina
- Cornus stolonifera** Michx.
Phyllactinia corylea
Septoria cornicola
branches: Cryptosporiopsis cornina
Dermatea Rubi
Diaporthe albocarnis
D. eres
Didymosphaeria diplospora
Lasiosphaeria canescens
Leptosphaeria borealis
L. rugosa
Lophiostoma prominens
Myxosporium nitidum
Ostropa cinerea
Patellaria clavisporea
Phialea vulgaris
Pleospora pustulans
Rosellinia mammiformis
Valsa ambiens
V. cornina
V. coronata
- Corydalis aurea** Willd.
- Corydalis glauca** Pursh
Peronospora Corydalis

- Corylus americana** Walt.
 Botrytis cinerea
 Gnomoniella Coryli
 Septoria corylina
- Corylus rostrata** Ait.
 Gloeosporium Coryli
 Gnomoniella Coryli
 G. Coryli var. circinata
 Phyllactinia corylea
branches: Diatrype albopruinosa
- Corylus** sp.
 Cryptosporella anomala
 Microsphaera Alni
branches: Catinula turgida
 Cenangium furfuraceum
 Cyphella fasciculata
 Diatrype Frostii
 D. missouriensis
 Hypoxylon fuscum
 Metasphaeria corylina
 Nectria rubicarpa
 Solenia anomala
 Sphaeropsis Coryli
 Streptothrix fusca
 Valsa ambiens
 V. leucostomoides
- Cotoneaster** sp. cult., *branches*
 Cucurbitaria elongata
 Valsa ambiens
 V. leucostoma
- Crataegus chrysocarpa** Ashe
 Gymnosporangium Betheli
 G. clavariiforme
stems: Diaporthe Crataegi
- Crataegus** sp.
 Gymnosporangium clavipes
 G. globosum
 Phyllosticta Crataegi
branches: Diatrype albopruinosa
 D. stigma
 Diatrype quercina
 Dictydiaethalium plumbeum
 Fenestella phaeospora
 Schizoxylon compositum
 Sphaeropsis Malorum
 Sporodesmium compositum
 Thyridium canadense
 Valsa ambiens
 V. leucostoma
- Crepis glauca** Rydb.
 Puccinia extensicola var. hieraciata
- Crepis runcinata** (James) Torr. & Gray
 Puccinia extensicola var. hieraciata
 P. Hieracii
- Ctenucha virginica** (insect)
 Empusa Grylli
- Cucumis melo** L., cult.
 Septoria Cucurbitacearum
- Cucumis sativus** L., cult.
 Bacillus tracheiphilus
 Cladosporium cucumerinum
 Fusarium Equiseti
 F. Poae
 Pseudomonas lachrymans
 Sclerotinia sclerotiorum
- Cutworms**
 Empusa virescens
 Tarichium megaspermum
- Cypripedium parviflorum** Salisb.
 Puccinia Cypripedii
- Cystopteris fragilis** (L.) Bernh.
 Hyalopsora Polypodii
- Dactylis glomerata** L.
 Claviceps purpurea
 Puccinia graminis
- Daedalea confragosa** (Bolt.) Fr.
 Calicium polyporaum
- Dahlia** sp. cult.
 Fusarium avenaceum
 Sclerotinia sclerotiorum
old stems: Acrostalagmus cinnabarinus
- Dasystephana**: see *Gentiana*
- Daucus carota** L., cult.
 Pseudomonas carotae
 Sclerotinia sclerotiorum
- Delphinium** spp., cult.
 Erysiphe Polygoni
 Pseudomonas Delphinii
 Rhizoctonia Solani
 Sclerotium Delphinii
- Deschampsia caespitosa** (L.) Beauv.
 Puccinia coronata
 P. graminis
- Dianthus barbatus** L., cult.
 Alternaria Dianthi
- Dianthus Caryophyllus** L., cult.
 Uromyces caryophyllinus
- Dianthus** sp., cult.
 Heterosporium echinulatum
- Diatrype** spp.
 Nectria episphaeria
- Dibotryon morbosum** (Schw.) Theiss. & Syd.
 Sporotrichum parasiticum
- Diervilla lonicera** Mill.
 Ramularia umbrina
 Septoria Diervillae
- Dimorphotheca** sp. cult.
 Albugo Tragopogonis
- Dissoteira carolina** (L.) (insect)
 Empusa Grylli
- Distichlis stricta** (Torr.) Rydb.
 Phyllachora graminis
 Puccinia Aristidae

Dodecatheon pauciflorum (Durand) Greene

Puccinia Ortonii

Uromyces acuminatus var. Steironematis

Doellingeria: see *Aster***Draba** sp.

Puccinia Drabae

Dracocephalum parviflorum Nutt.

Phyllosticta Dracocephali

Septoria Dracocephali

old stems: Leptosphaeria doliolum**Echinocystis lobata** Torr. & Gray

Septoria Sicyi

Elaeagnus angustifolia L.

Puccinia Caricis-Shepherdiae

Elaeagnus argentea Pursh

Cercospora manitobana

Puccinia Caricis-Shepherdiae

P. coronata

branches: Cucurbitaria elongata

Fusarium avenaceum

Peniophora crenea

Valsa ambiens

Elaphrus sp. (insect)

Laboulbenia flagellata

Eleocharis spp.

Claviceps nigricans

Puccinia Eleocharidis

Elymus canadensis L.

Claviceps purpurea

Helminthosporium sativum

H. Tritici-repentis

Phyllachora graminis

Puccinia coronata

P. graminis

P. montanensis

Urocystis Agropyri

Elymus curvatus Piper

Claviceps purpurea

Puccinia graminis

P. montanensis

Elymus dahuricus Turcz.

Claviceps purpurea

Puccinia graminis

Elymus diversiglumis Scribn. & Ball

Puccinia rubigo-vera var. Agropyri

Elymus glaucus Buckl., cult.

Puccinia graminis

Elymus innovatus Beal

Claviceps purpurea

Elymus jejunus (Ramaley) Rydb.

Puccinia montanensis

Elymus Macounii Vasey

Claviceps purpurea

Puccinia graminis

P. rubigo-vera var. Agropyri

Ustilago Lorentziana

U. striiformis

Elymus virginicus L.

Phyllachora graminis

Puccinia graminis

Elymus sp.

Epichloe typhina

Entoloma: see *Agaricaceae***Epilobium adenocaulon** Haussk.

Puccinia vagans var. Epilobii-tetragoni

Pucciniastrum pustulatum

Ramularia punctiformis

Sphaerotheca Humuli

Epilobium angustifolium L.

Monochaete Kriegeriana

Puccinia extensicola var. Oenotherae

P. gigantea

Pucciniastrum pustulatum

Ramularia cercosporoides

old stems: Pistillaria typhuloides**Equisetum sylvaticum** L.

Titaeospora detospora

Equisetum sp., *old stems*

Pezizella inquilina

Erigeron canadensis L.

Septoria erigerontea

Erigeron sp., *old stems*

Ophiobolus fulgidus

Eriogonum flavum Nutt.

Uromyces intricatus

Eriophorum angustifolium Roth

Puccinia angustata

Erysimum cheiranthoides L.

Peronospora Erysimi

Puccinia Aristidae

Erysiphaceae

Cicinobolus Cesatii

Eupatorium purpureum L. var. *maculatum* (L.) Darl.

Puccinia Eleocharidis

Euphorbia glyptosperma Engelm.**Euphorbia serpyllifolia** Pers.

Uromyces proeminens

Eutypa sp.

Nectria episphaeria

Falcata: see *Amphicarpa***Festuca elatior** L.

Claviceps purpurea

Puccinia graminis

Festuca Myuros L., cult.

Puccinia graminis

Festuca ovina L.

Puccinia Crandallii

Ficus elastica Roxb., cult.

Gloeosporium sp.

Filix: see *Cystopteris***Flies**

Empusa americana

E. Muscae

Fomes spp., old

Hypocrea citrina
Melanospora lagenaria

Fragaria glauca (Watson) Rydb.

Marssonina Potentillae
Ramularia Tulasnei

Fragaria pauciflora Rydb.

Marssonina Potentillae

Fragaria spp., native or cult.

Botrytis cinerea
Ramularia Tulasnei
Sphaerotheca Humuli
Uncinula parvula

Fraxinus campestris Britt.

Piggotia Fraxini
wood: Poria Vaillantii

Fraxinus pennsylvanica Marsh., native and cult.

Phyllosticta viridis
Piggotia Fraxini
Puccinia peridermiospora
Septoria Besseyi

branches: Botryosphaeria fuliginosa

Camarosporium Orni
Cenangium populneum
Corticium argentatum
Curreyella Bisbyi
Dinemasporium Robiniae
Eutypella Vitis
Fusarium lateritium
Hormiscium antiquum
Hysterographium Fraxini
Lophiostoma triseptatum
Ostropa cinerea
Peniophora cinerea
Sphaeropsis fertilis
Sporodesmium compositum
Valsa ambiens
V. fraxinina

bark: Corticium crustaceum

Dictydiaethalium plumbeum

wood: Calicium pusillum

Chaetomella atra var. lignicola
Chlorosplenium aeruginascens
Hypochnus umbrinus
Mollisia cinerea
Patellaria atrata
Peniophora incarnata
P. ludoviciana
P. pubera
P. Sambuci
Perichaena quadrata
Pleurotus applicatus
P. lignatilis
Propolis faginea
Rosellinia medullaris

Fraxinus pennsylvanica Marsh., native and cult.—*Con.*

samarae: Colletotrichum Dematium var.
samaricola

Discosia artocreas
Volutella ciliata

fallen leaves: Pistillaria clavulata

Fraxinus pennsylvanica var. lanceolata

(Borkh.) Sarg.

Phyllosticta viridis
Piggotia Fraxini
Puccinia peridermiospora

Gaillardia aristata Pursh, native and cult.

Entyloma polysporum

Galeopsis tetrahit L.

Erysiphe Galeopsidis
Septoria Galeopsidis

Galium boreale L.

Hainesia borealis
Peronospora borealis
Phoma elliptica
Placosphaeria punctiformis
Puccinia rubefaciens
Septoria psilostega

Galium trifidum L.

Puccinia punctata

Galium triflorum Michx.

Placosphaeria punctiformis
Pseudopeziza repanda
Puccinia punctata var. troglodytes
Septoria psilostega

Galium sp.

Erysiphe Cichoracearum

Gomphocerus clavatus Thom. (insect)

Empusa Grylli

Gaultheria procumbens L.

Venturia Gaultheriae

Gaura coccinea Pursh

Uromyces plumbarius

Gentiana affinis Griseb.

Puccinia Gentianae

Gentiana Amarella L. var. *acuta* (Michx.)

Herder
Puccinia Haleniae

Gentiana Andrewsii Griseb.

Asteroma Gentianae

Gentiana interrupta Greene

Puccinia Gentianae

Gentiana strictiflora (Rydb.) A. Nels.

Uromyces Gentianae

Geranium maculatum L.

Plasmopara Geranii

Geum macrophyllum Willd.

Sphaerotheca Humuli

- Geum strictum** Ait.
 ?Cercospora Gei
 Cylindrosporium Gei
 Peronospora Gei
 Phyllosticta decidua
 Sphaerotheca Humuli
old leaves: Discosia artocreas
- Geum triflorum** Pursh
 Peronospora Gei
 Ramularia Gei
 Urocystis Waldsteiniae
- Gilia linearis** (Nutt.) Gray
 Phytophthora parasitica
 Septoria Giliae
 Sphaerotheca Humuli
 Uromyces acuminatus var. Polemonii
- Gladiolus** sp. cult.
 Bacterium gummisudans
 B. marginatum
 Penicillium Gladioli
 Sclerotium Gladioli
 Urocystis Gladioli
- Glaux maritima** L.
 Puccinia Aristidae
 P. Distichlidis
- Glyceria grandis** Watson
 Ascochyta graminicola
 Claviceps microcephala
 Ustilago longissima
- Glycine max** Merr. cult
 Fusarium Solani
 Pseudomonas glycinea
- Glycyrrhiza lepidota** (Nutt.) Pursh
 Erysiphe Polygoni
 Septoria Glycyrrhizae
 Uromyces Glycyrrhizae
- Godetia** sp. cult.
 Pucciniastrum pustulatum
- Goldfish**
 Saprolegnia parasitica
- Grasshoppers**
 Empusa Grylli
 Rhizopus rhizopodiformis
 Scopulariopsis brevicaulis
- Grindelia perennis** A. Nels.
 Puccinia Grindeliae
- Grindelia squarrosa** (Pursh) Dunal
 Erysiphe Cichoracearum
old stems: Ophiobolus filisporus
- Gyrinus lugens** (insect)
 Laboulbenia Gyrindarum
- Halenia deflexa** (J. E. Sm.) Griseb.
 Cercospora Haleniae
- Halerpestes**: see *Ranunculus*
- Hedysarum americanum** (Michx.) Britt.
- Hedysarum boreale** Nutt.
- Hedysarum cinerascens** Rydb.
 Uromyces Hedysari-obscuri
- Helenium autumnale** L.
 Septoria Helenii
- Helianthus annuus** L., cult.
 Botrytis vulgaris
 Erysiphe Cichoracearum
 Plasmopara Halstedii
 Puccinia Helianthi
 Sclerotinia sclerotiorum
 Septoria Helianthi
old stems: Dasyscypha sporotricha
 Leptosphaeria doliolum
 Oedocephalum glomerulosum
old leaves: Didymium anellus
- Helianthus aridus** Rydb.
 Puccinia Helianthi
- Helianthus atrorubens** L.
- Helianthus divaricatus** L.
 Erysiphe Cichoracearum
- Helianthus fascicularis** Greene
 Puccinia Helianthi
- Helianthus Maximiliani** Schrad.
 Plasmopara Halstedii
 Puccinia Helianthi
 Septoria Helianthi
- Helianthus petiolaris** Nutt.
 Plasmopara Halstedii
 Puccinia Helianthi
 Septoria Helianthi
 Uromyces Junci
- Helianthus subrhomboides** Rydb.
 Plasmopara Halstedii
 Puccinia Helianthi
 Uromyces Junci
- Helianthus subtuberosus** Bourg.
 Puccinia Helianthi
- Helianthus tuberosus** L.
 Ascochyta Compositarum
 Puccinia Helianthi
 Septoria Helianthi
- Helvella** spp.
 Mycogone ochracea
 Sphaeronemella Helvellae
- Heracleum lanatum** Michx.
 Cylindrosporium Heraclei
 Phyllachora Heraclei
 Phyllosticta Heraclei
 Ramularia Heraclei
old stems: Ophiobolus anguillides
- Heteranthera dubia** (Jacq.) MacM.
 Membranosorus Heterantherae
- Heuchera Richardsonii** R. Br.
 Cercospora Heucherae
 Puccinia Heucherae
- Hibiscus esculentus** L., cult.
 Phyllosticta hibiscina

Hieracium canadense Michx.

Erysiphe Cichoracearum
Puccinia Hieracii

Hieracium scabriusculum Schw.

Puccinia extensicola var. hieraciata
Puccinia Hieracii

Hierochloa odorata (L.) Wahlenb.

Ascochyta graminis
Ophiobolus graminis
Puccinia graminis
Sphaerella ignobilis

Holcus Sorghum L., cult.

Sphacelotheca Sorghi

Holcus sudanensis (Piper) L. H. Bailey, cult.

Bacillus Sorghi
Piricularia grisea

Hordeum jubatum L.

Claviceps purpurea
Erysiphe graminis
Helminthosporium sativum
Ophiobolus graminis
Puccinia glumarum
P. graminis
P. montanensis
P. rubigo-vera var. Agropyri
P. rubigo-vera var. Impatientis
Rhynchosporium Secalis
Scolecotrichum graminis
Septoria Passerinii
Ustilago Lorentziana

Hordeum murinum L., cult.

Puccinia graminis

Hordeum vulgare L., cult.

Claviceps purpurea
Dilophospora Alopecuri
Erysiphe graminis
Fusarium avenaceum
F. bulbigenum
F. bulbigenum var. Lycopersici
F. culmorum
F. Equiseti
F. oxysporum
F. oxysporum var. aurantiacum
F. reticulatum
F. Scirpi
F. Solani
Helminthosporium geniculatum
H. gramineum
H. sativum
H. teres
Heterosporium Avenae
Lagena radicola
Olpidiaster radiceis
Ophiobolus graminis
Pseudomonas atrofaciens
P. translucens
P. translucens var. undulosa

Hordeum vulgare L., cult.—*Con.*

Puccinia anomala
P. glumarum
P. graminis
Pythium arrhenomanes var. canadensis
P. volutum
Rhynchosporium Secalis
Scolecotrichum graminis
Septoria Passerinii
Ustilago Hordei
U. medians
U. nuda

dead parts: Acremoniella atra

Chaetomium elatum
C. funicola

Houstonia longifolia Gaertn.

Uromyces houstoniatus

Humulus Lupulus L.

Colletotrichum Humuli
Pseudoperonospora Humuli
Sphaerotheca Humuli
old stems: Diplodia Humuli

Hydnaceae, *old*

Peniophora Sambuci

Hygrophorus: see **Agaricaceae****Hypoxydon** spp., *old*

Coniothyrium parasitans
Hypocrea patella

Hypericum perforatum L.

Uromyces Hyperici

Iberis sp., cult.

Rhizoctonia Solani

Impatiens biflora Walt.

Plasmopara obducens
Puccinia argentata
P. rubigo-vera var. Impatientis

Iris versicolor L.

Puccinia Iridis
P. sessilis

Iris spp., cult.

Bacillus carotovorus
Didymellina Iridis
Heterosporium gracile

Iva axillaris Pursh

Albugo Tragopogonis
Puccinia intermixta

Iva xanthifolia Nutt.

Basidiophora Kellermanii
Phyllosticta ivicola
Sclerotinia sclerotiorum

Juglans nigra L., cult.

Microstroma Juglandis

Juncus ater Rydb.**Juncus balticus** Willd.**Juncus Dudleyi** Wiegand**Juncus filiformis** L.

Uromyces Junci

- Juncus longistylis** Torr.
Juncus tenuis Willd.
 Uromyces Silphii
Juniperus communis L.
 Gymnosporangium clavipes
 Stigmatea Juniperi
branches: Peniophora nuda
Juniperus horizontalis Moench
 Gymnosporangium corniculans
 G. juvenescens
 G. globosum
 Lophodermium juniperinum
twigs: Hysterium acuminatum
 Karschia deformata
Juniperus sibirica Burgsd.
 Gymnosporangium clavipes
Juniperus sp., *old twigs*
 Corticium pelliculare
 Peniophora Sambuci
Koeleria cristata (L.) Pers.
 Puccinia Koeleriae
 P. monoica
Laciniaria: see *Liatris*
Lactarius spp.: see also *Agaricaceae*
 Hypomyces rosellus
 Peckiella viridis
 Verticillium Lactarii
Lactuca pulchella (Pursh) DC.
 Bremia Lactucae
 Ovularia Carletoni
 Puccinia extensicola var. hieraciata
 P. minussensis
Lactuca sativa L., cult.
 Botrytis cinerea
 Bremia Lactucae
 Puccinia extensicola var. hieraciata
 Sclerotinia sclerotiorum
Laportea canadensis (L.) Gaud.
 Ramularia Urticae
 Septoria Urticae
old stems: Calloria fusarioides
 Cylindrocolla Urticae
 Phoma nebulosa
 Pyrenopeziza compressula
Lappula deflexa (Wahlenb.) Garcke
 Erysiphe Cichoracearum
 Ramularia Lappulae
Lappula echinata Gilbert
 Cercoseptoria Lappulae
 Erysiphe Cichoracearum
 Peronospora Echinospemi
 Puccinia Aristidae
Larix laricina (Du Roi) Koch
 Melampsora Bigelowii
branches: Lophium mytilinum
 Peniophora alutaria
Lathyrus maritimus (L.) Bigel.
 Septoria Astragali
Lathyrus ochroleucus Hook.
 Septoria Astragali
 Uromyces Fabae
Lathyrus odoratus L., cult.
 Bacillus Lathyri
 Erysiphe Polygoni
 Fusarium Equiseti
 F. Solani var. Martii
 Microsphaera diffusa
 Rhizoctonia Solani
Lathyrus venosus Muhl.
 Cercospora Lathyri
 Erysiphe Polygoni
 Septoria Astragali
 Uromyces Fabae
old stems: Leptosphaeria doliolum
Lecanium sp. (insect)
 Cordyceps clavulata
Ledum groenlandicum Oeder
 Chrysomyxa Ledi
 C. ledicola
 Elsinoe Ledi
 Exobasidium Ledi
stems: Clithris lactea
old leaves: Lophodermium sphaeroides
Lentinus sp.: see *Agaricaceae*
Leontodon: see *Taraxacum*
Lepargyrea: see *Shepherdia*
Lepidium apetalum Willd.
 Albugo candida
 Peronospora Lepidii-virginici
 Septoria lepidiicola
Lepidium Draba L.
 Cercospora Bizzozzeriana
Lepidium Fletcheri Rydb.
 Puccinia Aristidae
Lepidium sativum L., cult.
 Peronospora Lepidii-sativi
Leptilon: see *Erigeron*
Liatris aspera (Michx.) Greene
 Puccinia Liatridis
 Septoria Liatridis
Liatris ligulistylis (A. Nels.) Rydb.
Liatris punctata Hook.
 Puccinia Liatridis
Lichens
 Illosporium roseum
 Sclerotium lichenicola
Lilium philadelphicum L. var. *andinum*
 (Nutt.) Ker
 Puccinia Sporoboli
Lilium sp. cult.
 Botrytis cinerea
 B. parasitica

- Linnaea borealis** L. var. **americana**
 (Forbes) Rehder
 Halbaniella Linnaeae
 Venturia Dickiei
- Linum Lewisii** Pursh
- Linum rigidum** Pursh
 Melampsora Lini
- Linum usitatissimum** L., cult.
 Fusarium Lini
 Melampsora Lini
 Polyspora Lini
 Pythium deBaryanum
 Rhizoctonia Solani
- Lonicera canadensis** Marsh.
 Glomerularia Lonicerae
twigs: Cercospora manitobiensis
- Lonicera glaucescens** Rydb.
 Cercospora antipus
 Microsphaera Alni
 Septoria Xylostei
- Lonicera Sullivantii** Gray
 Cercospora antipus
 Microsphaera Alni
- Lonicera tatarica** L., cult.
 Glomerularia Lonicerae
 Microsphaera Alni
twigs: Sphaeropsis zonata
- Luzula campestris** (L.) DC. var. **multiflora**
 (Ehrh.) Celak.
 Puccinia obscura
- Lychnis chalcidonica** L., cult.
 Phyllosticta Dianthi
 Septoria Lychnidis
- Lychnis Haageana** Lemaire, cult.
 Septoria Lychnidis
- Lychnis** sp. cult.
 Phyllosticta Lychnidis
- Lycopersicum esculentum** Mill., cult.
 Alternaria Solani
 Baeterium michiganense
 Cladosporium fulvum
 Corticium Solani
 Fusarium Equiseti
 F. Scirpi var. filiferum
 Nigrospora sphaerica
 Phoma destructiva
 Rhizoctonia Solani
 Septoria Lycopersici
- Lycopus lucidus** Turcz. var. **americanus**
 Gray
 Puccinia angustata
- Lygodesmia juncea** (Pursh) D. Don
 Puccinia extensicola var. hieraciata
 P. Grindeliae
 P. Stipae
- Lysimachia thyrsoflora** L.
 Puccinia Limosae
- Maianthemum canadense** Desf.
 Cercospora subsanguinea
 Puccinia amphigena
 P. sessilis
 Uromyces acuminatus var. magnatus
- Malva rotundifolia** L.
 Cercospora Malvarum
 Puccinia Malvacearum
 Septoria malvicola
- Malva** sp. cult.
 Puccinia Malvacearum
- Malvastrum coccineum** (Pursh) Gray
 Puccinia Sherardiana
- Man**: see p. 141.
- Medicago sativa** L., cult.
 Ascochyta Medicaginis
 Fusarium avenaceum
 Peronospora aestivalis
 Pseudopeziza Medicaginis
 Pseudoplea Trifolii
 Pyrenopeziza Medicaginis
 Sclerotinia sclerotiorum
 Uromyces striatus var. Medicaginis
old stems: Humarina testacea
 Oedocephalum glomerulosum
 Phialea cyathoidea
- Melanoplus bivittatus** Say (insect)
- Melanoplus infantalis** Scud.
- Melanoplus mexicanus** Sauss.
- Melanoplus packardi** Scud.
 Empusa Grylli
- Melilotus alba** Desr., cult. and escaped
 Cercospora Davisii
 Fusarium avenaceum
 F. Solani
 Plenodomus Meliloti
 Pseudopeziza Medicaginis
 Stagonospora Meliloti
- Melilotus officinalis** (L.) Lam., cult. and escaped
 Stagonospora Meliloti
- Melilotus** sp. cult.
 Fusarium Equiseti
 F. Poae
 F. Scirpi var. acuminatum
old stems: Ophiobolus porphyrogonus
 Phialea cyathoidea
 Pyrenophora calvescens
 Scopulariopsis brevicaulis
- Menispermum canadense** L.
 Cercospora Menispermii
 Entyloma Menispermii
 Phyllosticta abortiva
old stems: Diplodia sarmentorum
 Phoma Menispermii
 Sphaeropsis Menispermii
 Valsa Menispermii

Mentha arvensis L. var. canadensis (L.)

- Briquet
- Erysiphe Cichoracearum
- Ramularia variata

Mentha glabrior (Hook.) Rydb.

- Erysiphe Galeopsidis
- Puccinia angustata
- P. Menthae
- Ramularia menthicola
- Septoria menthicola

Mentha sp., old stems

- Mollisia atrocineria

Menyanthes trifoliata L.

- Physoderma Menyanthis
- Septoria Menyanthis

Meriolix: see Oenothera**Mertensia paniculata (Ait.) G. Don**

- Erysiphe Cichoracearum

Micrampelis: see Echinocystis**Mimulus ringens L.**

- Septoria Mimuli

Mitella nuda L.

- Puccinia Heucherae

Moehringia: see Arenaria**Moldavica: see Dracocephalum****Monarda fistulosa L.****Monarda menthaefolia Benth.**

- Puccinia Menthae

Monolepis Nuttalliana (Roemer & Schult.)

- Watson
- Albugo Bliti

Mosses

- Cyphella galeata
- C. muscigena
- Sclerotium Muscorum

Mucorales

- Chaetocladium Brefeldii
- Piptocephalis Freseniana

Muhlenbergia cuspidata (Torr.) Rydb.

- Phyllachora graminis

Musca domestica L. (house fly)

- Empusa Muscae
- Fusarium Poae

Myrica gale L.

- Cronartium Comptoniae
- Ovularia destructiva

Nabalus: see Prenanthes**Naumbergia: see Lysimachia****Nematodes**

- Harposporium Anguillulae

Nemexia lasioneuron (Hook.) Rydb.

- Puccinia amphigena

Neslia paniculata (L.) Desv.

- Albugo candida
- Cercospora Nesliae

Norta: see Sisymbrium**Nymphaea advena Ait.**

- Entyloma Nymphaeae
- Phyllosticta fatiscens
- old leaf: Sporobolomyces roseus

Oenothera biennis L.

- Erysiphe Polygoni
- Peronospora Arthuri
- Puccinia extensicola var. Oenotherae
- Septoria Oenotherae

Oenothera strigosa Rydb.

- Peronospora Arthuri

Oligoneuron: see Solidago**Onosmodium occidentale Mackenzie**

- Puccinia rubigo-vera var. apocrypta

Oryzopsis asperifolia Michx.

- Phyllachora graminis
- Puccinia pygmaea

Osmorrhiza longistylis (Torr.) DC.

- Cercospora Osmorrhizae
- Phleospora Aegopodii
- Puccinia Pimpinellae

old stems: Colletotrichum Dematium

Oxytropis Belli (Britt.) Pilibine

- Sphaerella Astragali

Oxytropis gracilis (A. Nels.) K. Schum.

- Uromyces punctatus

Padus: see Prunus**Paeonia officinalis Retz., cult.**

- Botrytis cinerea
- B. Paeoniae
- Cladosporium Paeoniae

Paeonia sp. cult.

- Phyllosticta Commonsii
- Septoria Paeoniae

old stems: Phoma Paeoniae

Panicularia: see Glyceria**Panicum miliaceum L., cult.**

- Sorosporium Panici-miliacei

Parnassia palustris L.

- Puccinia uliginosa

Parthenocissus: see Psedera**Pastinaca sativa L., cult.**

- Cercospora Pastinacae
- Cylindrosporium crescentum
- Ramularia Pastinacae
- Sclerotinia sclerotiorum

Paxillus: see Agaricaceae**Pelargonium zonale Willd.**

- Botrytis cinerea
- Pythium deBaryanum var. Pelargonii
- P. ultimum

Pentstemon acuminatus Dougl.

- Puccinia Andropogonis var. Pentstemonis
- Septoria pentstemonicola

Pentstemon albidus Nutt.**Pentstemon eriantherus Pursh**

- Pentstemon nitidus** Dougl.
Puccinia Andropogonis var. Pentstemonis
- Persicaria**: see **Polygonum**
- Petalostemum candidum** Michx.
Puccinia Andropogonis var. Onobrychidis
Synchytrium aureum
- Petalostemum purpureum** (Vent.) Rydb.
Puccinia Andropogonis var. Onobrychidis
- Petalostemum oligophyllum** (Torr.) Rydb.
Uropyxis Petalostemonis
- Petasites palmatus** (Ait.) Gray
Puccinia conglomerata
Ramularia variegata
Stagonospora Petasitidis
- Petasites sagittatus** (Pursh) Gray
Phyllosticta Petasitidis
- Petunia hybrida** Vilm., cult.
Erysiphe Cichoracearum
- Phacelia Franklinii** (R. Br.) Gray
Puccinia rubigo-vera var. apocrypta
- Phalaris arundinacea** L.
Claviceps purpurea
Cylindrosporium Phalaridis
Puccinia graminis
P. sessilis
Pythium arrhenomanes var. canadensis
Rhynchosporium Secalis
- Phalaris canariensis** L., cult.
Puccinia graminis
- Phaseolus vulgaris** L., cult.
Colletotrichum Lindemuthianum
Fusarium Equiseti
F. Solani
Pseudomonas Phaseoli
- Phleum pratense** L., cult. and escaped
Claviceps microcephala
Erysiphe graminis
Heterosporium Phlei
Puccinia graminis var. Phlei-pratensis
Pythium arrhenomanes var. canadensis
Scolecotrichum graminis
Ustilago striiformis
- Phlox Drummondii** Hook., cult.
Septoria divaricata
- Phlox Hoodii** Richards.
Puccinia Douglasii
- Phlox** sp. cult.
Uromyces acuminatus var. Polemonii
- Phoenix canariensis** Chabaud, cult.
Graphiola Phoenixis
- Phragmites communis** Trin.
Hadrotrichum lineare
Napicladium arundinaceum
Puccinia Magnusiana
P. Phragmitis
stems: Graphyllum manitobiense
Hendersonia arundinacea
- Phragmites communis** Trin.—*Con.*
Lophiostoma Arundinis
Mollisia arundinacea
Papularia sphaerosperma
- Physalis heterophylla** Nees
Puccinia Physalidis
- Physalis lanceolata** Michx.
Alternaria Solani
Entyloma australe
- Physalis virginiana** Mill.
Puccinia Physalidis
- Physostegia virginiana** (L.) Benth.
Septoria Physostegiae
- Picea canadensis** (Mill.) B.S.P. (*P. glauca*)
Chrysomyxa ledicola
C. Pyrolae
Melampsorella Cerastii
twigs: Hysterium acuminatum
Schizoxylon sepincola
wood: Fomes pinicola
Hypochnus fumosus
H. rubiginosus
Polyporus immitis
P. Schweinitzii
P. volvatus
Poria candidissima
- Picea mariana** (Mill.) B.S.P.
Chrysomyxa Ledi
C. ledicola
Melampsorella Cerastii
- Picea** spp.
twigs: Dasyscypha arida
Nectria cucurbitula
bark: Badhamia populina
Peniophora piccina
Sebacina calcea
Stereum sanguinolentum
wood: Coniophora arida
C. byssoidea
C. cerebella
C. olivacea
C. suffocata
Corticium albostramineum
C. Berkeleyi
C. fenestratum
C. pelliculare
C. subcoronatum
C. vagum
Cribraria dictyoides
Didymium melanospermum
Fomes Pini var. Abietis
Hymenochaete tenuis
Hypochnus coriarius
H. pannosus
H. spongiosus var. spiniferus
Lophium mytilinum
Merulius aureus

Picea spp.—*Con.*

Peniophora alutaria

P. carnosa

P. glebulosa

P. livida

Physarum nutans

cones: Ciboria rufusca*old needles:* Helotium sulphuratum**Pilobolus** sp.

Syncephalis nodosus

Pinus Banksiana Lamb.

Coleosporium Solidaginis

Cronartium Comandrae

C. Comptoniae

Hypodermella ampla

Leptostroma Pinastri

Lophodermium Pinastri

see Wallrothiella

branches: Dasyscypha Pini

Marasmius campanellus

bark: Coniophora byssoidea

C. Kalmiae

Corticium botryoideum

C. vagum

Patinella punctiformis

Peniophora cinerea

Tremella saccharina var. foliacea

wood: Corticium pelliculare

Lasiosphaeria ovina

Lophium mytilinum

Hypochnus canadensis

H. echinosporus

H. fumosus

H. umbrinus

Merulius aureus

M. fugax

Pachybasium pyramidale

Peniophora cremea

P. glebulosa

P. tenuis

Thelephora terrestris

old needles: Marasmius androsaceus**Pinus contorta** Dougl. var. **Murrayana**

(Balf.) Engelm.

Hypodermella concolor

Pinus sp.

Cronartium Quercuum

wood: Coniophora suffocata

Crepidotus nidulans

Fomes pinicola

Pisum sativum L., cult.

Ascochyta Pisi

Colletotrichum Pisi

Erysiphe Polygoni

Fusarium Solani var. Martii

Pseudomonas Pisi

Septoria flagellifera

Pisum sativum L., cult.—*Con.*

S. Pisi

Uromyces Fabae

Plantago eriopoda Torr.

Puccinia Aristidae

Plantago major L. .

Erysiphe Cichoracearum

Peronospora alta

Phyllosticta Plantaginis

Septoria plantaginea var. Plantaginis-majoris

Pleurotus sp.

Cladosporium epimyces

Poa arida Vasey

Puccinia rubigo-vera var. Agropyri

Poa compressa L.

Erysiphe graminis

Poa crocata Michx.

Uromyces Dactylidis

Poa nemoralis L.

Erysiphe graminis

Poa palustris L.

Erysiphe graminis

Puccinia Poae-sudeticae

Poa pratensis L., cult. and escaped

Claviceps purpurea

Colletotrichum graminicola

Erysiphe graminis

Puccinia Poae-sudeticae

Uromyces Dactylidis

Ustilago striiformis

old leaves: Pistillaria culmigena**Polygala Senega** L.

Puccinia Andropogonis var. polygalina

Polygonum amphibium L. var. **Hartwrightii** (Gray) Bissell

Puccinia Polygoni-amphibii var. Persicariae

Polygonum aviculare L.

Cercospora avicularis

Erysiphe Polygoni

Uromyces Polygoni

Polygonum buxiforme Small

Uromyces Polygoni

Polygonum cilinode Michx.

Ramularia cilinodis

Ustilago anomala

Polygonum Convolvulus L.

Puccinia Polygoni-amphibii var. Convolvuli

Polygonum erectum L.

Cercospora avicularis

Erysiphe Polygoni

Ovularia avicularis

Puccinia Aristidae

Ramularia rufomaculans

Uromyces Polygoni

- Polygonum Muhlenbergii** (Meisn.) Watson
Puccinia Polygoni-amphibii var. *Persicariae*
Ramularia anomala
R. rufomaculans
- Polygonum neglectum** Besser
Erysiphe Polygoni
Puccinia Aristidae
- Polygonum Persicaria** L.
Septoria Polygonorum
Ustilago utriculosa
- Polygonum ramosissimum** Michx.
- Polygonum rubescens** Small
Uromyces Polygoni
- Polygonum sagittatum** L.
Gloeosporium Polygoni
- Polygonum** spp., *old stems*
Metasphaeria Polygoni-sagittati
Phialea scutula
- Polyporaceae, old**
Calicium polyporaceum
Dactylium dendroides
Hypocrea citrina
H. pallida
Hypomyces aurantius
H. rosellus
Oxydontia alboboviride
- Populus angustifolia** James
Septoria populicola
Uncinula Salicis
- Populus balsamifera** L.
Cladosporium sub sessile
Marssonina Castagnei
Melampsora Medusae
M. occidentalis
Phyllosticta brunnea
Sclerotium bifrons
Septoria musiva
S. populicola
Uncinula Salicis
branches: Cucurbitaria staphula
Dichaena Populi
Valsa nivea
bark: Calosphaeria exilis
Sebacina calcea
wood: Corticium fenestratum
Fomes pinicola
Polyporus adustus
P. pargamenus
Trametes hispida
bud scales: Lachnum virgineum
old leaves: Pistillaria clavulata
- Populus deltoides** Marsh.
Melampsora Medusae
branches: Cytospora chrysosperma
- Populus tremuloides** Michx.
Cladosporium sub sessile
Cytospora chrysosperma
Fomes ignarius
Fusicladium radiosum
Hypoxylon pruina tum
Marssonina Castagnei
Myrioconium comitatum
Phyllosticta brunnea
Sclerotium bifrons
Septogloeum rhopaloides
branches: Cryptosphaeria populina
Melanconis occulta
Stictis curtispora
Teichospora pruniformis
Valsa nivea
bark: Botryophoma populicola
Eutypa lata
wood: Daedalea unicolor
Fomes fomentarius
F. pinicola
Odontia fimbriata
Polyporus adustus
P. hirsutus
P. pargamenus
P. velutinus
Rosellinia pulveracea
Trametes hispida
calkins: Ciboria caucis
- Populus** spp.
Phyllosticta intermixta
branches: Corticium scutellare
Didymella canadensis
Fenestella phaeospora
Fusarium sporotrichioides
Lophidium compressum
Lophiostoma triseptatum
L. vestitum
Ostropa cinerea
Stereum rufum
Stictis mollis
S. radiata
Trimmatostroma americanum
Valsaria insitiva
bark: Acanthostigma Clintoni
A. dispar
Amphisphaeria bisphaerica
Areyria cinerea
A. denudata
A. ferruginea
Botrytis cinerella
Cenangium populneum
Chondromyces aurantiacus
Corticium botryoideum
C. crustaceum
C. polygonium
Daldinia grandis

Populus spp.—*Con.*

Dianema Harveyi
Diderma Chondrioderma
Eichleriella spinulosa
Eutypa Acharii
Exidia glandulosa
Fuligo intermedia
Helicoma Berkeleyi
H. monilipes
H. olivaceum
Heliomyces gracilis
Hormiactis alba
Hyalopus ochraceus
Hypocrea rufa
Hypoxylon Howeianum
Lachnella corticalis
Naematelia nucleata
Peniophora mutata
P. piceina
P. velutina
Perichaena corticalis
Phlebia strigosozonata
Poria borealis
P. corticola
P. eupora
P. reticulata
P. rhodella
Scopularia Populi
Teichospora obducens
Tuber candidum
Tympanis spermatiospora
wood: Aleurodiscus cerussatus
Amphisphaeria albomaculans
Arcyria occidentalis
Badhamia magna
B. panicea
B. utricularis
Caldesiella ferruginosa
Calocera cornea
Catinella nigro-olivacea
Ceratostoma brevirostre
Chaetosphaeria atrobarba
Chlorosplenium aeruginascens
Cienkowskia reticulata
Comatrichia flaccida
Coniophora byssoidea
C. cerebella
C. olivacea
C. suffocata
Coprinus apthosus
Corticium arachnoideum
C. flavescens
C. lactescens
C. luridum
C. porosum
C. rubellum
C. velleum

Populus spp.—*Con.*

Coryne sarcoides
C. sarcoides var. *urnalis*
Crepidotus calolepis
C. cinnabarinus
C. fulvotomentosus
C. haerens
C. herbarum
C. sepiarius
Cyphella fasciculata
C. minutissima
Desmazierella echinata
Diatrype bullata
Didymium crustaceum
D. melanospermum
Dinemasporium Robiniae
Flammula alnicola
Fomes applanatus
F. ignarius var. *nigricans*
Grandinia Brinkmannii
Helotium citrinum
H. virgultorum
Hemitrichia stipata
Humarina trachyderma
Hymenochaete cinnamomes
Hypochnus canadensis
H. coriarius
H. echinosporus
H. ferrugineus
H. fumosus
H. isabellinus
H. pallidofulvus
H. pannosus
H. pilosus
H. rubiginosus
H. umbrinus
Hypoxylon rubiginosum
H. serpens
Hysterographium Mori
Lasiosphaeria canescens
L. hirsuta
L. hispida
L. ovina
L. spermoides
L. strigosa
L. viridicoma
Lentinus sulcatus
L. vulpinus
Lenzites betulina
Merulius tremellosus
Mollisia cinerea
Naucoria lignicola
Nectria Peziza
Odontia arguta
O. bicolor
O. crustosa
O. fusco-atra

Populus spp.—Con.

O. lactea
O. setigera
O. uda
Orbilbia xanthostigma
Panus stypticus
Patella setosa
Patellaria atrata
Peniophora Allescheri
P. crassa
P. guttulifera
P. longispora
P. pubera
Pezizella viridiflavescens
Pholiota squarrosoides
Physarum auriscalpium
P. bitectum
P. contextum
P. globuliferum
P. notabile
P. nutans
P. oblatum
P. viride
Pleurotus craspedius
P. ostreatus
P. pulmonarius
Polyporus albellus
P. cinnabarinus
P. floriformis
P. glomeratus
P. semipileatus
P. subchartaceus
Poria ambigua
P. punctata
P. purpurea
P. semitincta
P. versipora
Porothelium fimbriatum
Propolis faginea
Radulum casearium
R. spathulatum
Rosellinia parasitica
Saccoblastia pinicola
Schizophyllum commune
Steccherinum ochraceum
Stereum cinerascens
S. fasciatum
S. fuscum
S. purpureum
Teichospora fulgurata
T. populina
Trametes malicola
Tremella viscosa
Trichia contorta
T. inconspicua
Zignoella pulviscula

calkins: *Helotium amentii*

Populus spp.—Con.

fallen leaves: *Discosia artocreas*
Helotium epiphyllum
Marasmius epiphyllus
Sclerotium compactum
Typhula filiformis

Portulaca oleracea L.

Albugo Portulacae

Potamogeton heterophyllus Schreb.**Potamogeton natans L.**

Doassansia Martianoffiana

Potentilla anserina L.

Ramularia arvensis

Potentilla bipinnatifida Dougl.

Mollisia Dehnii

Phragmidium Ivesiae

P. Potentillae

Potentilla fruticosa L., native and cult.

Phragmidium Andersoni

Potentilla glabrella Rydb.**Potentilla hippiana Lehm.**

Phragmidium Potentillae

Potentilla monspeliensis L.

Mollisia Dehnii

Peronospora Potentillae

Ramularia arvensis

Potentilla Nuttallii Lehm.

Phragmidium Ivesiae

Potentilla palustris (L.) Scop.

Septogloeum Potentillae

Potentilla pennsylvanica L.**Potentilla strigosa Pall.**

Phragmidium Potentillae

Potentilla tridentata Ait.

Pucciniastrum Potentillae

Prenanthes alba L.

Puccinia extensicola var. hieraciata

Septoria Nabali

Prenanthes racemosa Michx.

Puccinia extensicola var. hieraciata

P. orbicula

Prunella vulgaris L.

Septoria Brunellae

Prunus americana Marsh.

Cylindrosporium prunophorae

branches: *Fomes fulvus*

Prunus Besseyi L. H. Bailey, native and cult.

Bacillus amylovorus

Cytospora ambiens

Podosphaera Oxyacanthae

Sclerotinia fructicola

Taphrina deformans

Tubercularia vulgaris

branches: *Clasterosporium carpophilum*

Micropera drupacearum

Valsa ambiens

Valsella Laschii

Prunus melanocarpa (A. Nels.) Rydb.

Dibotryon morbosum
Nectria cinnabarina
Podosphaera Oxyacanthae
Sclerotinia fructicola

branches: Diatrype stigma

Prunus nigra Ait., cult.

Bacillus amylovorus
Cylindrosporium prunophorae
Sclerotinia fructicola
Taphrina communis

branches: Diaporthe Pruni

Micropera drupacearum
Polyporus pubescens
P. tulipiferus
P. versicolor
Valsa ambiens

old pits: Sporormia leptosphaerioides

Prunus pennsylvanica L. f.

Cylindrosporium hiemale
Dibotryon morbosum
Taphrina insititiae

Prunus pumila L.

Dibotryon morbosum
Podosphaera Oxyacanthae

Prunus virginiana L.

Cylindrosporium lutescens
Dibotryon morbosum
Phyllosticta virginiana
see Sporotrichum parasiticum

branches: Cenangium populneum var. prunicola

Diatrype albopruinosa
Diatrypella verrucaeformis
Diplodia Pruni
Phoma Pruni
Teichospora insecure

Prunus spp., native and cult.

Cladosporium carpophilum
Phyllosticta circumscissa
Pseudomonas tumefaciens
Trichothecium roseum

branches: Botryosphaeria fuliginosa

Corticium crustaceum
Cytospora leucostoma
Massaria conspurcata
Melanconium cerasinum
Nectria cinnabarina
Poria prunicola
Rosellinia ligniaria
Schizoxylon insigne
Solenia anomala
Sphaerographium niveum
Sphaeropsis Malorum
Stereum purpureum
Valsa cincta
V. leucostoma

Psedera quinquefolia (L.) Greene, native and cult.

Cercospora arborea
Phyllosticta viticola
Uncinula necator

Psoralea argophylla Pursh

Dicoceum Psoraleae
Septoria argophylla
Uromyces Psoraleae var. argophyllae

Psoralea esculenta Pursh

Gloeosporium Psoraleae

Psoralea lanceolata Pursh

Uromyces Psoraleae var. typica

Pteretis nodulosa (Michx.) Nieuwl.

Taphrina Struthiopteridis
Uredinopsis Struthiopteridis

old fronds: Cyphella capula

Dasyascypha Carestiana
Leptothyrium litigiosum
Solenia filicina

Pteridium latiusculum (Desv.) Maxon

Cryptomyces Pteridis

Puccinellia nutkaensis (Presl) Fern. &

Weath.

Puccinellia tenuiflora (Griseb.) Scrib. &

Merr.

Puccinia rubigo-vera var. Agropyri

Puccinia: see **Uredinales****Pulsatilla:** see **Anemone****Pyrola asarifolia** Michx.

Chrysomyxa Pyrolae
Pucciniastrum Pyrolae

Pyrola chlorantha Swartz**Pyrola elliptica** Nutt.

Pucciniastrum Pyrolae

Pyrola rotundifolia L.

Chrysomyxa Pyrolae
Pucciniastrum Pyrolae

Pyrola sp.

Sphaerella Pyrolae

Pyrus americana (Marsh.) DC.

Gymnosporangium aurantiaeum

Pyrus baccata L., cult.

Bacillus amylovorus
Fusicladium dendriticum
Sphaeropsis Malorum

branches: Cytospora ambiens

Daldinia grandis

Diatrype stigma

Diatrypella irregularis

Eutypa ludibunda

Hypoxylon Morsei

Metasphaeria leiostega

Phlebia strigosozonata

Polyporus tulipiferus

P. versicolor

Schizophyllum commune

Pyrus baccata L., cult.—*Con.*

Stereum purpureum
Tubercularia vulgaris
Valsa ambiens
V. leucostoma

Pyrus Malus L., cult.

Penicillium expansum
branch: Corticium laeve

Pyrus sp.

Coniothyrium pyrinum
Entomosporium maculatum
Gymnosporangium clavipes

Quercus dentata Thunb., cult.

Taphrina caerulescens

Quercus macrocarpa Michx.

Marssonina Martini
Microsphaera Alni var. calocladophora
Phyllosticta livida
P. phomiformis
Taphrina caerulescens
branches: Coryneum Kunzei
C. pustulatum
Dasyscypha cerina
Diaporthe talcola
Diatrype stigma
Didymosphaeria diplospora
Fenestella amorpha
F. princeps
Helminthosporium macrocarpon
Hymenochaete Curtisii
Metasphaeria querna
Ostropa cinerea
Peniophora cinerea
Pestalozzia bicilia
Valsa ambiens
Valsaria insitiva
bark: Aleurodiscus acerinus
A. griseocanus
Amphisphaeria applanata
Corticium centrifugum
C. crustaceum
C. rubellum
Stereum gausapatum
Teichospora obduccens
wood: Corticium septentrionale
Fistulina hepatica
Helminthosporium fusiforme
Panus stypticus
Patellea sanguinea
Peniophora pubera
Polyporus brumalis
P. planellus
P. resinosus
P. versicolor
Propolis faginea
Rosellinia ligniaria

Quercus macrocarpa Michx.—*Con.*

fruits: Calicium pusillum
Helotium fructigenum
Sclerotinia pseudotuberosa
fallen leaves: Cylandrium aeruginosum
Cyphella trachychaeta
Discosia artoceas
Helotium albidum
Marasmius epiphyllus
M. felix
Sclerotinia candolleana

Radicula Armoracia (L.) B. L. Robinson,
cult. and escaped

Ramularia Armoraciae

Radicula palustris (L.) Moench

Albugo candida

Ranunculus abortivus L.

Ascochyta infuscans
Puccinia ?Eatoniae

Ranunculus Cymbalaria Pursh

Puccinia rubigo-vera var. Agropyri

Ranunculus delphinifolius Torr.

Doassansia ranunculina

Ranunculus Macounii Britt.

Entyloma Ranunculi
Uromyces Alopecuri

Ranunculus pennsylvanicus L.

Fabraea Ranunculi

Ranunculus sceleratus L.

Uromyces Alopecuri

Raphanus sativus L., cult.

Albugo candida

Rhamnus alnifolia L'Her.

Cercospora Rhamni
Puccinia coronata

Rhamnus cathartica L., cult.

Puccinia coronata

Rheum Rhaponticum L., cult.

Ascochyta Rhei
Colletotrichum erumpens
Peronospora Jaapiana
Phoma herbarum
Phyllosticta straminella
Puccinia Phragmitis

Rhus glabra L.

Sphaerotheca Humuli

Rhus Toxicodendron L.

Cercospora rhoica
Cylindrosporium Toxicodendri
Phyllosticta rhoicola
Pileolaria Toxicodendri

Ribes aureum Pursh, cult.

Gloeosporium Ribis
Septoria aurea

stems: Thyronectria berolinensis

Sphaeropsis ribicola

Ribes floridum L'Her.

Puccinia Caricis var. grossulariata

Septoria Ribis

Sphaerotheca mors-uvae

stems: Dothidea ribesia

Mastomyces Friesii

Metasphaeria leiostega

Thyridium antiquum

Thyronectria berolinensis

Ribes Grossularia L., cult.

Pseudopeziza Ribis

Puccinia Caricis var. grossulariata

Septoria Ribis

stems: Thyronectria berolinensis**Ribes hudsonianum** Richards.

Sphaerotheca mors-uvae

Ribes lacustre (Pers.) Poir.

Puccinia Parkerae

Ribes nigrum L., cult.

Alternaria fasciculata

Gloeosporium Ribis

Puccinia Caricis var. grossulariata

Septoria Ribis

Sphaerotheca mors-uvae

Ribes oxycanthoides L.

Plasmopara ribicola

Puccinia Caricis var. grossulariata

Ribes setosum Lindley

Puccinia Caricis var. grossulariata

Ribes triste Pallas

Puccinia Ribis

Ribes vulgare Lam.

Pseudopeziza Ribis

Septoria Ribis

stems: Dothidea ribesia

Fomes Ribis

Sphaeropsis ribicola

Thyronectria berolinensis.

Tubercularia vulgaris

Ribes sp., *stems*

Godronia urceolus

Lachnum bicolor

Nectria cinnabarina

Sebacina calcea

Sphaerographium niveum

Roripa: see **Radicula****Rosa acicularis** Lindl.

Phragmidium Rosae-acicularis

Rosa blanda Ait.

Phragmidium montivagum

Sphaerotheca Humuli

stems: Phomatospora Rosae**Rosa Macounii** Greene

Phragmidium Rosae-acicularis

P. speciosum

Rosa spp.

Actinonema Rosae

Cercospora rosicola

Phragmidium disciflorum

P. Rosae-arkansanae

P. rosicola

Sphaerotheca Humuli

stems: Cytospora ambiens

Diatrype stigma

D. tristicha

Didymosphaeria diplospora

Lophiostoma triseptatum

Metasphaeria leiostega

Pseudomonas tumefaciens

Sphaerotheca Humuli

Tapesia Rosae

old leaves: Diplocarpon Rosae

Discosia artocreas

Rubus acaulis Michx.**Rubus arcticus** L.

Gymnoconia Peckiana

Pucciniastrum arcticum

Rubus idaeus L. var. **aculeatissimus** (C. A.

Mey.) Regel & Tiling

Botrytis cinerea

Didymosphaeria manitobiensis

Stigmatea rubicola

Rubus idaeus var. **strigosus** Maxim., cult.

Coniothyrium Fuckelii

Didymella applanata

Gloeosporium venetum

Leptosphaeria Coniothyrium

Metasphaeria leiostega

Phragmidium Rubi-idaei

Septoria Rubi

Sphaerotheca Humuli

Rubus melanolasius Focke

Phragmidium Rubi-idaei

Septoria Rubi

Rubus triflorus Richards.

Gymnoconia Peckiana

Phyllosticta Dearnessii

Pucciniastrum arcticum

Septoria Rubi

Sphaerotheca Humuli

old leaves: Discosia artocreas**Rudbeckia lacinata** L.

Erysiphe Cichoracearum

Phyllosticta Rudbeckiae

Plasmopara Halstedii

Ramularia Rudbeckiae

Septoria Rudbeckiae

Uromyces perigynius

U. Rudbeckiae

stems: Colletotrichum Rudbeckiae

- Rudbeckia laciniata** var. **hortensia** L. H. **Salix** spp., native and cult.—*Con.*
 Bailey, cult.
Sclerotinia sclerotiorum
- Rumex crispus** L.
Ramularia decipiens
- Rumex mexicanus** Meisn.
Puccinia Phragmitis
- Rumex occidentalis** Watson
Puccinia ornata
P. Phragmitis
- Rumex venosus** Pursh
Ramularia decipiens
- Russula** spp., *old*
Cladosporium epimyces
Peckiella viridis
Sporodinia grandis
Verticillium Lactarii
- Sabina**: see **Juniperus**
- Sagittaria arifolia** Nutt.
Doassansia intermedia
D. Sagittariae
- Sagittaria latifolia** Willd.
Cercospora Sagittariae
Gloeosporium confluens
Doassansia deformans
D. furva
D. intermedia
D. Sagittariae
Fusarium Scirpi var. *acuminatum*
Rhynchosporium Alismatis
- Salix amygdaloides** Anders.
Melampsora Bigelowii
bark: *Aleurodiscus griseocanus*
wood: *Peniophora Roumeguerii*
- Salix brachycarpa** Nutt.
- Salix candida** Fluegge
- Salix cordata** Muhl.
Melampsora Abietis-capraearum
- Salix herbacea** L.
Melampsora Bigelowii
- Salix pentandra** L.
Cytospora chrysosperma
- Salix** spp., native and cult.
Cercospora salicina
Gloeosporium Salicis
Marssonina sp.
Melampsora Bigelowii
Ramularia rosea
Rhytisma salicinum
Septoria salicina
Uncinula Salicis
twigs: *Cytidia salicina*
Cytospora ambiens
C. Caprae
Diaporthe tessella
Diatrype albopruinosa var. *salicina*
D. stigma
- Didymella canadensis*
Diplodina Salicis
Favolus canadensis
Helotium salicellum
Lophiostoma erosum
L. sexnucleatum
L. triseptatum
Macrophoma Salicis
Ocellaria ocellata
Ostropa cinerea
Peniophora cinerea
Pleospora herbarum
Sphaerographium niveum
Stereum rufum
Teichospora insecure
T. megastega
Trimmatostroma americanum
Valsa ambiens
V. boreella
V. pallida
V. salicina
V. translucens
- bark*: *Aleurodiscus cerussatus*
Chromocrea gelatinosa
Corticium crustaceum
Eutypa Acharii
E. lata
Exidia glandulosa
Leptosphaeria consimilis
Phialea vulgaris
- wood*: *Chlorosplenium aeruginosum*
Corticium roseum
C. vellereum
Daedalea unicolor
Fomes ignarius
Hymenochaete coriarius
Hysterographium Mori
Hysteropatella elliptica
Lasiosphaeria hirsuta
L. ovina
Mollisia cinerea
Odontia arguta
Oligonema nitens
Peniophora glebulosa
P. guttulifera
P. longispora
P. pubera
P. Sambuci
Pezizella viridiflavescens
P. xylita
Polyporus arcularius
P. dichrous
P. gilvus
P. melanopus
P. tulipiferus
P. velutinus

Salix spp., native and cult.—*Con.*

Poria ferruginosa
P. punctata
P. viticola
Rosellinia mammiformis
Stereum versiforme
Trametes hispida
T. suaveolens
Trinacrium mycogonis
Xylaria acuta

cattkins: *Ciboria amentacea*
Helotium amenti

Sambucus racemosa L., cult.

Septoria sambucina

Sambucus sp., *twigs*

Camarosporium Sambuci
Phoma sambucina

Sanicula marilandica L.

Puccinia marylandica
Urophlyctis pluriannulata

Saponaria officinalis L., cult.

Cylindrosporium officinale

Saponaria Vaccaria L.

Macrosporium Saponariae

Sarcobatus vermiculatus (Hook.) Torr.

Puccinia Aristidae

Sarracenia purpurea L.

Mycosphaerella Sarraceniae

Schizachyrium: see *Andropogon***Scirpus atrovirens** Muhl.**Scirpus cyperinus** (L.) Kunth**Scirpus microcarpus** Presl

Puccinia angustata

Scirpus paludosus A. Nels.

Uromyces Scirpi

Scirpus validus Vahl

Hypoderma scirpinum
Puccinia obtecta
Septoria narvisiana

Scolochloa festuacea (Willd.) Link

Puccinia coronata

Scutellaria lateriflora L.

Erysiphe Galeopsidis
Septoria Scutellariae

Secale cereale L., cult.

Claviceps purpurea
Erysiphe graminis
Fusarium avenaceum
F. Equiseti
F. oxysporum
Helminthosporium geniculatum
H. sativum
Lagenia radiculicola
Olpidiaster radieis
Puccinia graminis
P. rubigo-vera var. *Secalis*
Pseudomonas translucens var. *Secalis*

Secale cereale L., cult.—*Con.*

Pythium arrhenomanes var. *canadensis*
P. volutum
Septoria Secalis
Sphacelia segetum
Urocystis occulta

Senecio columbianus Greene

Puccinia extensicola var. *hieraciata*

Setaria glauca (L.) Beauv.

Ustilago neglecta

Setaria italica (L.) Beauv., cult.

Sclerospora graminicola

Setaria viridis (L.) Beauv.

Piricularia grisea
Pythium arrhenomanes var. *canadensis*
Sclerospora graminicola

Shepherdia argentea Nutt.

Puccinia Caricis-Shepherdiae
Sphaerotheca Humuli var. *fuliginea*

Shepherdia canadensis (L.) Nutt.

Puccinia Caricis-Shepherdiae
P. coronata
Septoria Shepherdiae
Sphaerotheca Humuli var. *fuliginea*

Sibbaldiopsis: see *Potentilla***Sieversia**: see *Geum***Silene noctiflora** L.

Septoria Lychnidis

Sisymbrium altissimum L.

Albugo candida
Peronospora parasitica
Puccinia Aristidae

Sisymbrium canescens Nutt.

Puccinia Aristidae

Sisymbrium Sophia L.

Albugo candida

Sisyrinchium angustifolium Mill.

Brencklea Sisyrinchii

Sium cicutifolium Schrank

Fusieladium depressum
Septoria Sii
Uromyces Scirpi

Smilacina stellata (L.) Desf.

Cylindrosporium Smilacis
Phyllosticta Convallariae
Puccinia amphigena
P. sessilis
Uromyces acuminatus var. *magnatus*
stems: *Colletotrichum Dematium*

Smilax herbacea L.

Colletotrichum Liliacearum
Metasphaeria Dearnessii
Phyllosticta hispida
Puccinia amphigena
Ramularia subrufa
Stagonospora Smilacis

Soil-fungi: see (76, 78)

- Soja:** see *Glycine*
- Solanum melongena** L., cult.
Alternaria Solani
- Solanum triflorum** Nutt.
Entyloma australe
- Solanum tuberosum** L., cult.
Actinomyces scabies
Alternaria Solani
Bacillus phytophthorus
Colletotrichum atramentarium
Corticium Solani
Fusarium coeruleum
F. oxysporum form 1
F. sambucinum form 6
F. trichothecioides
Phytophthora infestans
Rhizoctonia Crocorum
R. Solani
Spondylocadium atrovirens
Verticillium albo-atrum
old tubers: Acrostalagus cinnabarinus
Stysanus Stemonites
- Solidago canadensis** L.
Cercospora cana
Coleosporium Solidaginis
- Solidago gilvocanescens** (Rydb.) Smyth
Coleosporium Solidaginis
Ramularia Virgaureae
- Solidago hispida** Muhl.
Ramularia Virgaureae
- Solidago multiradiata** Ait.
Coleosporium Solidaginis
- Solidago nemoralis** Ait.
Puccinia extensicola var. Solidaginis
- Solidago rigida** L.
Puccinia extensicola var. Solidaginis
P. Stipae
Septoria solidaginicola
- Solidago serotina** Ait.
Coleosporium Solidaginis
Puccinia extensicola var. Solidaginis
Septoria solidaginicola
- Solidago** sp.
Erysiphe Cichoracearum
stems: Ophiobolus fulgidus
Rhabdospora Solidaginis
R. subgrisea
- Sonchus arvensis** L.
Marssonina Sonchi
Rhizoctonia Solani
Septoria Sonchi-arvensis
S. sonchifolia
stems: Leptosphaeria doliolium
L. subconica
Phiala cyathoides
Sclerotium deciduum
Sporocybe tessulata
- Sophia:** see *Sisymbrium*
- Sorbus:** see *Pyrus*
- Spartina gracilis** Trin.
Claviceps purpurea
Puccinia Distichlidis
Uromyces acuminatus var. magnatus
U. acuminatus var. Polemonii
- Spartina pectinata** Bosc
Puccinia Distichlidis
Uromyces acuminatus var. magnatus
U. acuminatus var. Polemonii
- Sphaeralcea:** see *Malvastrum*
- Spharagemon collare** (Scud.) (insect)
Empusa Grylli
- Sphenopholis obtusata** (Michx.) Scribn.
Puccinia Eatoniae
- Spider**
Beauveria densa
- Spinacia oleracea** L., cult.
Peronospora Spinaciae
- Spiraea salicifolia** L.
Cercospora rubigo
Cylindrosporium salicifoliae
- Spiraea** sp. cult.
Nectria cinnabarina
- Spirodela polyrhiza** (L.) Schleid.
Tracya Lemnae
- Spirogyra** sp.
Lagenidium sp.
- Sporobolus cryptandrus** (Torr.) Gray
Puccinia graminis
- Stachys palustris** L.
Erysiphe Cichoracearum
E. Galeopsidis
Septoria Stachydis
- Stachys scopulorum** Greene
Erysiphe Galeopsidis
- Steironema ciliatum** (L.) Raf.
Phyllosticta decidua
Puccinia Dayi
P. Distichlidis
Ramularia Lysimachiae
Septoria conspicua
- Stellaria longifolia** Muhl.
- Stellaria longipes** Goldie
Puccinia Arenariae
- Stellaria media** (L.) Cyrillo
Septoria Stellariae
- Stipa comata** Trin. & Rupr.
Puccinia Stipae
Urocystis granulosa
Ustilago hypodytes
- Stipa spartea** Trin.
Puccinia Stipae

Stipa viridula Trin.

- Claviceps purpurea
- Puccinia scaber
- Ustilago hypodytes

Symphoricarpos albus (L.) Blake

- Microsphaera diffusa

Symphoricarpos occidentalis Hook.

- Cercospora Symphoricarpi
- Microsphaera diffusa
- Puccinia Crandallii
- Rhizogene Symphoricarpi
- Septoria Symphoricarpi
- stems*: Anthostoma melanotes
- Camarosporium umbonatum
- Cryptospora Kansensis
- Cytospora Symphoricarpi
- Didymosphaeria decolorans
- Dothichiza Symphoricarpi
- Haplosporella Symphoricarpi
- Hymenochaete cinnamomea
- Lophidium sp.
- Lophiostoma praemorsum
- L. triseptatum
- Metasphaeria sp.
- Mollisia caesia
- Othia Symphoricarpi
- Peniophora cinerea
- P. suberemea
- Pestalozzia pezizoides form longiseta
- Rhabdospora sp.
- Rosellinia parasitica
- Schizoxylon decipiens var. Symphoricarpi
- Valsa Symphoricarpi

Symphoricarpos sp.

- Phyllosticta Symphoricarpi

Syringa vulgaris L., cult.

- Microsphaera Alni
- branches*: Sphaeropsis Syringae

Tamarix sp. cult., *old stems*

- Coniothyrium Tamaricis
- Valsa ambiens

Tanacetum vulgare L., cult.

- Ramularia Tanacetii

Taraxacum dumetorum Greene

- Puccinia Hieracii

Taraxacum officinale Weber

- Puccinia Hieracii
- Ramularia Taraxaci
- Rhizoctonia Solani
- Sphaerotheca Humuli var. fuliginea
- old parts*: Colletotrichum Dematium

Thalictrum dasycarpum Fisch. & Lall.

- Erysiphe Polygoni
- Phytophthora Thalictri
- Puccinia rubigo-vera var. Agropyri
- P. rubigo-vera var. agropyrina
- Tranzschelia Thalictri
- stems*: Rhabdospora rugica

Thalictrum dioicum L.

- Entyloma Thalictri
- Mycosphaerella Thalictri
- Phytophthora Thalictri
- Puccinia rubigo-vera var. Agropyri

Thalictrum venulosum Trel.

- Puccinia rubigo-vera var. Agropyri
- P. rubigo-vera var. agropyrina
- Tranzschelia Thalictri

Thalictrum sp.

- Cylindrosporium Thalictri
- Septoria Thalictri

Thermopsis rhombifolia (Nutt.) Richards.

- Cercospora Thermopsidis
- stems*: Endodothella sp.
- Phoma thermopsidicola

Thlaspi arvense L.

- Alternaria Brassicae
- Puccinia Aristidae

Thuja occidentalis L.

- branches*: Anthostomella pholidigena
- bark*: Mytilidion Thujarum
- Odontia alutacea
- wood*: Coniophora cerebella
- Corticium vagum
- Pleurotus applicatus

Tilia americana L.

- Phyllosticta Tiliae
- branches*: Cyphellae Tiliae
- Dinemasporium Robiniae
- Exosporium Tiliae
- Fusarium avenaceum
- Massariella Curreyi
- Sphaeropsis olivacea
- bark*: Corticium confluens
- Naematelia nucleata
- Peniophora nuda
- wood*: Corticium septentrionale
- Hypoxylon rubiginosum
- Orbilbia chrysocoma

Tiniaria: see **Polygonum****Toxicodendron**: see **Rhus****Trachyrachis kiowa** (Thom.) (insect)

- Empusa Grylli

Tragopogon dubius Scop.**Tragopogon porrifolius** L.

- Albugo Tragopogonis

Trientalis americana (Pers.) Pursh

- Ramularia Magnusiana
- Septoria inrescens

Trifolium hybridum L., cult. and escaped

- Cercospora zebrina
- Polythrincium Trifolii
- Pseudoplea Trifolii
- Stagonospora Meliloti
- Uromyces nerviphilus
- U. Trifolii var. hybridi

Trifolium medium L., cult.

Uromyces Trifolii var. fallens

Trifolium pratense L., cult. and escaped

Erysiphe Polygoni

Gloeosporium spadiceum

Polythrincium Trifolii

Pseudoplea Trifolii

Sclerotinia sclerotiorum

Uromyces Trifolii var. fallens

Trifolium repens L., cult. and escaped

Uromyces nervophilus

U. Trifolii var. Trifolii-repentis

Triglochin maritima L.

Puccinia Aristidae

Trisetum spicatum (L.) Richter

Puccinia monoica

Triticum aestivum L., cult.

Claviceps purpurea

Erysiphe graminis

Fusarium avenaceum

F. avenaceum var. volutum

F. bulbigenum

F. bulbigenum var. Lycopersici

F. culmorum

F. culmorum var. cereale

F. Equiseti

F. Equiseti var. bullatum

F. moniliforme

F. orthoceras

F. orthoceras var. longius

F. oxysporum

F. oxysporum var. aurantiacum

F. Poae

F. reticulatum

F. Scirpi var. acuminatum

F. Scirpi var. filiferum

F. Solani

F. Solani var. Martii

F. sporotrichioides

Helminthosporium geniculatum

H. sativum

H. teres

H. tetramera

H. Tritici-repentis

Lagenia radiculicola

Olpidiaster radialis

Ophiobolus graminis

Pseudomonas atrofaciens

P. translucens var. undulosa

Puccinia glumarum

P. graminis

P. rubigo-vera var. Tritici

Pythium arrhenomanes var. canadensis

P. volutum

Septoria nodorum

S. Tritici

Thielavia terricola

Triticum aestivum L., cult.—*Con.*

Tilletia caries

T. laevis

Trichothecium roseum

Ustilago Tritici

Wojnowicia graminis

old parts of plants, and roots; some fungi possibly parasitic:

Acrostalagmus cinnabarinus

Aspergillus flavipes.

A. Okazakii

Bullera alba

Chaetomium elatum

C. globosum

Cladosporium graminum

Coprinus phaeosporus

Cunninghamella elegans

Epicoccum purpurascens

Fusarium coeruleum

Geomyces vulgaris

Gliocladium roseum

Metarrhizium sp.

Metasphaeria hyalospora

Monilia implicata

Penicillium lilacinum

P. restrictum

P. Thomii

Pestalozzia sp.

Pyrenophora trichostoma

P. Tritici-repentis

Speira toruloides

Triticum compactum Host, cult.**Triticum dicoccoides** Korn., cult.**Triticum dicoccum** Schrank, cult.

Puccinia graminis

Triticum durum Desf., cult.

Claviceps purpurea

Fusarium avenaceum

F. bulbigenum

F. oxysporum

F. Scirpi

Gelasinospora cerealis

Helminthosporium geniculatum

H. sativum

H. tetramera

Lagenia radiculicola

Puccinia graminis

P. rubigo-vera var. Tritici

Pseudomonas atrofaciens

Tilletia caries

T. laevis

Ustilago Tritici

Triticum Spelta L., cult.

Puccinia rubigo-vera var. Tritici

Tropaeolum majus L., cult.

Albugo candida

Tulipa Gesneriana L., cult.

Botrytis Tulipae

Typha latifolia L., *old parts*

Heterosporium maculatum

Peniophora Sambuci

Ulmus americana L., native and cult.

Gnomonia ulmea

branches: Camarosporium cruciatum

Dinemasporium Robiniae

Diplodia melaena

Nummularia repanda

Ostropa cinerea

Peniophora cinerea

Sphaeropsis ulmicola

Thyridium ambleium

Valsa ambiens

bark: Diatrype hochelagae

Grandinia helvetica

Hysteropatella Prostii

Marasmius androsaceus

Peniophora longispora

Pestalozzia insidens

Teichospora obducens

wood: Aleurodiscus cerussatus

Coprinus domesticus

Corticium fenestratum

C. pelliculare

C. roseum

Mollisia cinerea

Pleurotus ulmarius

Polyporus conchifer

P. fumosus

P. hirsutus

P. tulipiferus

old leaves: Helotium albidum

H. renisporum

Typhula gyrans

Ulmus parviflora Jacq., cult.

Nectria cinnabarina

Uredinales

Darlucula filum

Tuberculina persicina

Unifolium: see **Maianthemum**

Urtica gracilis Ait.

Puccinia Caricis var. urticata

Ramularia Urticae

Sclerotinia sclerotiorum

Septoria Urticae

stems: Leptosphaeria doliolum

Pistillaria micans

Urtica Lyallii Watson

Puccinia Caricis var. urticata

Urticastrum: see **Laportea**

Vaccinium canadense Kalm

Venturia compacta

Vaccinium Vitis-idaea L.

Pucciniastrum Goeppertianum

Vaccinium sp.

Exobasidium Vaccinii

Vagnera: see **Smilacina**

Valsa sp., *old*

Nectria episphaeria

Verbena hastata L.

Phyllosticta verbenicola

Veronica longifolia L., cult.

Septoria Veroniceae

Sphaerotheca Humuli var. fuliginea

Veronica peregrina L.

Peronospora grisea

Viburnum Lentago L.

Coleosporium Viburni

Microsphaera Alni

branches: Cryptosporella Lentaginis

Diaporthe Viburni

Didymosphaeria epidermidis

Eutypa milliaria

Fomes conchatus

Hysterographium flexuosum

H. Fraxini

Polyporus nidulans

Stictis fusca

S. radiata

Viburnum Opulus L.

Cercospora Opuli

Plasmopara Viburni

Ramularia Viburni

branches: Diaporthe Viburni

Diatrypella discoidea

Didymella manitobiensis

Didymosphaeria epidermidis

Heteropatella Viburni

Hypoxyton fuseum

Hysterographium Fraxini

Leptosphaeria borealis

Massaria plumigera var. tetraspora

Pestalozzia bicilia

Rhabdospora Viburni-Opuli

Stictis fusca

S. mollis

Valsa ambiens

Viburnum pauciflorum Raf.

Cercospora Opuli

C. varia

Puccinia Linkii

Viburnum pubescens (Ait.) Pursh

Cercospora varia

Phyllosticta Lentaginis

stems: Metasphaeria anisometra

Viburnum sp., *branches*

Corticium centrifugum
 C. crustaceum
 Diatrype asterostoma
 Didymium melanospermum
 Naematelia nucleata
 Phialea vulgaris

Vicia americana Muhl.

Peronospora narbonensis
 Uromyces coloradensis var. campester
 U. Fabae

Vicia americana var. *angustifolia* Nees

Microsphaera Alni
 Peronospora Viciae-sativae
 Uromyces coloradensis var. campester

Vicia Cracca L.

Uromyces coloradensis var. campester

Vicia oregana Nutt.

Uromyces Fabae

Vicia villosa Roth, cult.

Ascochyta Viciae

Viola adunca Smith

Puccinia Violae

Viola canadensis L.

Phyllosticta Violae
 Puccinia Violae
 Ramularia ionophila
 Sphaerotheca Humuli
 S. Humuli var. fuliginea

Viola neprophylla Greene

Puccinia Ellisiana
 P. Violae

Viola odorata L.**Viola pedatifida** G. Don**Viola pubescens** Ait.**Viola renifolia** Gray

Puccinia Violae

Viola tricolor L., cult.

Cercospora Violae-tricoloris
 Puccinia Violae
 Sphaerotheca Humuli var. fuliginea

Viola sp.

Septoria Violae

Vitis vulpina L.

Phyllosticta spermoides

stems: Aleurodiscus griseocanus

Coniothyrium olivaceum

Corticium filicinum

Didymella lophospora

Didymosphaeria diplospora

Lophiostoma triseptatum

Melanopsamma subfasciculata

Phialea scutula

Sphaeropsis vitigena

Vitis sp., cult.

Plasmopara viticola

Xanthium commune Britt.

Puccinia Xanthii

Septoria Xanthii

Zea Mays L., cult.

Bacillus Sorghi

Fusarium avenaceum form 1

Lagenia radicicola

Nigrospora sphaerica

Puccinia Sorghi

Pythium arrhenomanes var. canadensis

P. volutum

Ustilago Zeae

old parts: Diplodia Zeae

Fusarium Scirpi var. acuminatum

Gibberella Saubinetii

Monascus purpureus

Zinnia elegans Jacq., cult.

Erysiphe Cichoracearum

Zizia aurea (L.) Koch

Ascochyta Thaspiae

Puccinia Angelicae

Zizia cordata (Walt.) DC.

Cercospora Ziziae

Puccinia Ziziae

stems: Colletotrichum Dematium

Zygadenus elegans Pursh

Puccinia atropuncta

Zygadenus gramineus Rydb.

Uromyces Zygadeni

XVIII BIBLIOGRAPHY

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Part II is the Bibliography of papers published by mycologists and plant pathologists in Saskatchewan. It was prepared by Dr. R. C. Russell and Prof. W. P. Fraser.

Part III includes the publications by Manitoban mycologists, except those at the Rust Research Laboratory.

Part IV is the Bibliography of all papers published from the Dominion Rust Research Laboratory at Winnipeg.

The references in Parts II, III and IV are believed to be complete to November, 1936, but in parts II and III most of the papers not mycological, or not pertaining to western Canada, have been omitted.

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XIX. INDEX TO GENERA AND ORDERS OF FUNGI

The first figure after a name refers to the page of entry in the List of Species. An italicized figure refers to the page where the genus is entered as a synonym.

- | | |
|--------------------------|------------------------------|
| Absidia, 32, 16 | Ascomycetes, 34, 21 |
| Acanthostigma, 50 | Ascophanus, 35 |
| Achorion, 141 | Ascotricha, 47 |
| Acremoniella, 112 | Aspergillus, 112, 16, 33, 34 |
| AcrospERMum, 45 | Asteridium 47 |
| Acrostalagmus, 112 | Asterina, 47 |
| Actinomyces, 112, 28 | Asterocystis, 29, 16 |
| Actinonema, 128 | Asteroma, 132 |
| Aegerita, 77 | Asteromella, 132 |
| Agaricaceae, 85, 15, 22 | Astraeus, 110 |
| Agaricales, 75 | Aulographum, 47 |
| Albugo, 29 | Auricularia, 74 |
| Aleuria, 35 | Auriculariales, 74, 14, 21 |
| Aleurina, 35 | Auriscalpium, 79 |
| Aleurodiscus, 75 | |
| Alternaria, 112, 16 | Bacillus, 27, 14 |
| Amanita, 85, 18, 22 | Bacteria, 27, 20 |
| Amanitopsis, 86 | Bacterium 28 |
| Amphisphaeria, 52, 54 | Bactridium, 113 |
| Ancylistales, 29, 21 | Badhamia, 25 |
| Anellaria, 107 | Basidiophora, 29 |
| Anthostoma, 56 | Basisporum, 122 |
| Anthostomella, 56 | Beauveria, 113, 16 |
| Apiosporina, 44 | Bertia, 50 |
| Arachniotus, 34 | Bertiella, 50 |
| Arachnopeziza, 38 | Bolbitius, 98 |
| Areyria, 25, 26 | Boletinus, 85 |
| Armillaria, 86, 22 | Boletus, 85, 15, 22 |
| Arthrobotrys, 112 | Bombardia, 47 |
| Ascobolus, 35 | Bothrodiscus, 38 |
| Ascocalyx, 38 | Botryobasidium, 75 |
| Ascochyta, 133, 135, 141 | Botryophoma, 132 |

- Botryosphaeria, 59
 Botryotrichum 113
 Botrytis, 113
 Bovista, 111
 Bremia, 30
 Brencklea, 132
 Bulgaria, 36
 Bullera, 60

 Cadophora, 141
 Caldesiella, 79
 Calicium, 38
 Calloria, 38
 Calocera, 74
 Calodon, 79
 Calonectria, 45
 Calosphaeria, 50
 Calvatia, 111
 Camarosporium, 132
 Candida, 141
 Cantharellus, 86, 22
 Catinella, 38
 Catinula, 152
 Cenangium, 39
 Cephalosporium, 113, 16
 Cephalothecium, 128
 Ceratiomyxa, 25
 Ceratostoma, 51
 Cercoseptoria, 114
 Cercospora, 114, 18, 23, 119, 130
 Cercosporella, 115
 Ceriospora, 53
 Chaetocladium, 32
 Chaetomella, 132
 Chaetomium, 47
 Chaetosphaeria, 50, 116
 Cheilymenia, 37
 Chlorociboria, 39
 Chlorosplenium, 39
 Chondromyces, 24
 Chromocrea, 45
 Chrysomyxa, 62
 Chytridiales, 29, 21
 Ciboria, 39, 21, 40
 Cicinnobolus, 132
 Cienkowskia, 25
 Cintractia, 60
 Cladochytrium, 29
 Cladosporium, 115
 Cladotrichum, 116
 Clasterosporium, 116
 Claudopus, 96, 18
 Clavaria, 79, 18
 Clavariaceae, 79, 14, 22
 Claviceps, 45
 Clithris, 42
 Clitocybe, 86, 18, 22

 Clitopilus, 96
 Coleosporium, 63
 Colletotrichum, 129
 Collybia, 87, 15, 18, 22
 Comatrichia, 25
 Coniochaeta, 48
 Coniophora, 75, 76
 Coniosporium, 122
 Coniothecium, 116
 Coniothyrium, 132
 Coprinus, 107, 15, 23
 Cordyceps, 45, 16
 Coremium, 116
 Corticium, 75
 Cortinarius, 98, 23
 Coryne, 39
 Coryneum, 129, 116
 Craterellus, 76
 Craterium, 25
 Creonectria, 45
 Crepidotus, 100, 18, 23
 Cribraria, 25
 Cronartium, 63
 Crucibulum, 111
 Cryptomyces, 42
 Cryptosphaeria, 57
 Cryptospora, 58
 Cryptosporella, 58
 Cryptosporiopsis, 132
 Cryptosporium, 129
 Cucurbitaria, 51
 Cudonia, 34
 Cunninghamella, 32
 Curreyella, 46, 58
 Curvularia, 120
 Cyathus, 111
 Cylindrium, 116
 Cyllindrocarpon, 116, 16
 Cyllindrocolla, 116
 Cyllindrosporium, 129
 Cyphella, 76
 Cystopus, 29
 Cytidia, 76
 Cytospora, 132

 Dacryomyces, 74
 Dacryomycetales, 74, 14, 21
 Dactylium, 116
 Daedalea, 81, 15
 Daldinia, 59
 Darluca, 133, 16
 Dasyscypha, 39
 Delitschia, 48, 50
 Dematium, 141
 Dentinum, 80
 Dermatea, 39
 Desmazierella, 40

- Diachaea, 25
Dianema, 25
Diaporthe, 57, 14, 21
Diatrype, 58
Diatrypella, 59
Dibotryon, 46, 15
Dichaena, 43
Dicoccum, 116
Dictydiaethalium, 25
Dictydium, 25
Dictyophora, 110
Dictyosporium, 127
Dictyostelium, 24
Diderma, 25
Didymaria, 117, 119
Didymella, 53
Didymellina, 53
Didymium, 25
Didymosphaeria, 54, 20
Dilophospora, 133
Dinemasporium, 133
Diplocarpon, 47, 131
Diplodia, 133, 18
Diplodina, 133
Discina, 36
Disciseda, 111
Discosia, 133
Doassansia, 60
Dothichiza, 133
Dothidea, 47
Dothideales, 46, 21
Durandiomyces, 36

Eccilia, 96
Eichleriella, 74
Eleutheromyces, 45
Elsinoe, 46
Empusa, 33, 16
Endogone, 32
Endomycopsis, 141
Endodothella, 47
Enteridium, 26
Entoloma, 96
Entomophthorales, 33, 21
Entomosporium, 130
Entyloma, 60
Epichloe, 46
Epicoccum, 117
Epidermophyton, 141
Erysiphe, 44
Eurotium, 34
Eutypa, 57
Eutypella, 57
Exidia, 74
Exoascales, 34
Exobasidium, 77
Exosporium, 117

Fabraea, 40
Favolus, 81
Fenestella, 57
Fimetaria, 49
Fistulina, 81, 18
Flammula, 101
Fomes, 81, 141, 15
Frankiella, 28
Fuligo, 26
Fumago, 117
Fungi Imperfecti, 112, 15, 21
Fusarium, 117, 141, 16, 23
Fusicladium, 119

Galera, 101, 23
Geaster, 111, 110, 141
Gelasinospora, 48
Geoglossum, 34, 21
Geomyces, 119
Geopyxis, 36, 40
Geotrichum, 119
Gibberella, 46, 18
Gliocladium, 119
Gloeosporium, 130, 131
Glomerularia, 119
Glonium, 43
Gnomonia, 56
Gnomoniella, 56
Godronia, 40
Gomphidius, 110, 23
Grandinia, 80
Graphiola, 61
Graphium, 119
Graphyllum, 43
Guepinia, 74
Gymnoascus, 34
Gymnoconia, 64
Gymnosporangium, 64
Gyrocephalus, 74
Gyromitra, 34

Hadrotrichum, 119
Hainesia, 133
Halbaniella, 47
Haplographium, 119
Haplosporella, 133
Harposporium, 119
Hebeloma, 101, 23
Helicobasidium, 125
Helicogloea, 74
Helicoma, 119
Helicoon, 120
Heliomyces, 120
Helminthosphaeria, 50
Helminthosporium, 120, 119, 16, 23
Helotium, 40
Helvella, 34, 18

- Helvellales, 34, 21
 Hemitrichia, 26
 Hendersonia, 133
 Hericium, 80
 Heteropatella, 133
 Heterosporium, 120
 Higginsia, 129
 Hormiactis, 121
 Hormiscium, 121
 Hormodendron, 121
 Humarina, 36
 Hyalopsora, 63
 Hyalopus, 121
 Hydnaceae, 79, 14, 22
 Hydnum, 80, 79
 Hygrophorus, 88, 23
 Hymenochaete, 77
 Hymenogaster, 110
 Hymenogastreales, 110
 Hymenula, 127
 Hypholoma, 105
 Hyphomyces, 112
 Hypochnus, 77, 75
 Hypocopa, 48
 Hypocrea, 46
 Hypocreales, 45, 15, 21
 Hypoderma, 43
 Hypodermella, 43
 Hypomyces, 46
 Hypoxylon, 59
 Hysteriales, 43, 21
 Hysterium, 43
 Hysterographium, 43
 Hysteropatella, 40

 Illosporium, 121
 Inocybe, 102, 23
 Ithyphallus, 110

 Karschia, 40
 Kellermannia, 132
 Kirschsteiniella, 52

 Laboulbenia, 60
 Laboulbeniales, 60, 16, 21
 Labridella, 131
 Laccaria, 89
 Lachnea, 36, 37
 Lachnella, 40, 37
 Lachnobolus, 25
 Lachnum, 40
 Lactarius, 89, 23
 Lagenia, 29
 Lagenidium, 29
 Lamproderma, 26
 Lamprospora, 36
 Lasiobolus, 36
 Lasiobotrys, 44
 Lasiosphaeria, 51
 Leicographa, 40
 Lemonniera, 121
 Lentinus, 90
 Lenzites, 81, 85
 Leocarpus, 26
 Leotia, 35
 Lepiota, 90, 18, 23
 Leptonia, 97
 Leptosphaeria, 54, 55
 Leptostroma, 133, 129
 Leptothyrium, 134
 Leucodochium, 121
 Libertella, 130
 Licea, 26
 Lophidium, 52
 Lophiosphaeria, 52
 Lophiostoma, 52
 Lophium, 43
 Lophodermium, 43
 Lycogala, 26
 Lycoperdales, 110, 23
 Lycoperdon, 111, 141

 Macrophoma, 134
 Macrosporium, 121
 Marasmius, 91, 23
 Marssonina, 130
 Marssonina, 130
 Massaria, 56
 Massariella, 56
 Mastomyces, 134
 Melampsora, 63
 Melampsorella, 63
 Melampsoridium, 63
 Melanconiales, 128
 Melanconis, 58
 Melanconiopsis, 140
 Melanconium, 131
 Melanomma, 51
 Melanopsamma, 51
 Melanospora, 46
 Melastiza, 36
 Melogrammataceae, 59
 Membranosorus, 29
 Merulius, 82
 Mesobotrys, 121
 Metarrhizium, 121
 Metasphaeria, 54
 Microdiplodia, 134
 Micropera, 134
 Microsphaera, 44
 Microsporon, 141
 Microstroma, 121
 Microthyriales, 47
 Mitrula, 35

- Modicella, 32
 Mollisia, 40
 Monascus, 34
 Monilia, 121, 15
 Moniliales, 112
 Monochaetia, 131
 Monotospora, 121
 Montagnella, 47
 Morchella, 35
 Mortierella, 32, 16, 21
 Mucilago, 26
 Mucor, 32, 16
 Mucorales, 32, 15, 16, 21
 Mucronella, 80
 Mutinus, 110
 Myceena, 91, 23
 Mycenastrum, 111
 Mycoderma, 122
 Mycogone, 122, 15, 121
 Mycosphaerella, 53, 141
 Myrioconum, 122
 Mytilidion, 43
 Myxobacteriaceae, 24, 15, 20
 Myxococcus, 24
 Myxomycetes, 25, 16, 20
 Myxosporium, 131

 Naematelia, 74
 Napicladium, 122, 119
 Naucoria, 103
 Nectria, 46
 Nidularia, 111
 Nidulariales, 111, 23
 Nigrospora, 122
 Nolanea, 97
 Nummularia, 60
 Nyssopsora, 64

 Ocellaria, 42
 Odontia, 80
 Oedocephalum, 122
 Oidiodendron, 142
 Oligonema, 26
 Olpidiaster, 29, 16
 Olpidium, 29
 Omphalia, 93
 Onygena, 34
 Oospora, 122
 Ophiobolus, 55
 Ophiocladium, 122
 Ophiodothis, 47
 Ophiotheca, 26
 Orbilia, 41
 Ostropa, 42
 Otthia, 52
 Ovularia, 122
 Oxydontia, 80
 Ozonium, 122

 Pachybasium, 122
 Paecilomyces, 122
 Panacolus, 110, 23
 Panus, 93
 Papularia, 122
 Patella, 36
 Patellaria, 41
 Patellea, 41
 Patinella, 41
 Paxillus, 104
 Paxina, 37
 Peckia, 46
 Pedilospora, 122
 Penicillium, 123, 16, 122
 Peniophora, 77, 80
 Perichaena, 26
 Peridermium, 63
 Perisporiales, 44, 21
 Peronospora, 30, 21, 31
 Peronosporales, 29, 21
 Perrotia, 37
 Pestalozzia, 131
 Peziza, 37
 Pezizales, 35, 15, 21
 Pezizella, 41
 Phacidiales, 42, 21
 Phallales, 110, 23
 Phialea, 41, 40
 Phlebia, 80
 Phleospora, 134
 Philogiotis, 75
 Pholicta, 104, 23
 Phoma, 134, 142
 Phomatospora, 55
 Phomopsis, 134
 Phragmidium, 64
 Phycomyces, 32
 Phycomycetes, 29, 21
 Phyllachora, 47
 Phyllactinia, 44
 Phyllosticta, 134
 Physalospora, 55
 Physarella, 26
 Physarum, 26
 Physoderma, 29
 Phytophthora, 30, 15
 Piggotia, 136
 Filaira, 32
 Pileolaria, 65
 Pilobolus, 32
 Piptocephalis, 33
 Piricularia, 124
 Pistillaria, 79
 Pityrosporon, 141
 Placosphaeria, 136
 Plasmodiophora, 28
 Plasmopara, 31, 15

- Platyglœa, 74
Plectania, 37, 18
Plectascales, 34
Plenodomus, 136
Pleomassaria, 56
Pleosphaerulina, 53
Pleospora, 55
Pleurage, 48
Pleurotus, 93
Plowrightia, 46
Pluteolus, 105
Pluteus, 97, 23
Podosphaera, 44
Polyporaceae, 81, 14, 22
Polyporus, 82, 15, 18, 20
Polyscytalum, 124, 116
Polyspora, 124
Polythrincium, 124
Poria, 84, 22
Porothelium, 85
Propolis, 42
Prunulus, 91
Psalliota, 106, 15
Psathyra, 106, 23
Psathyrella, 110
Pseudobalsamea, 44, 15
Pseudomonas, 28
Pseudoperonospora, 31
Pseudopeziza, 41, 40
Pseudoplea, 53
Pseudoplectania, 37
Psilocybe, 106, 23
Psilopezia, 37
Pterula, 79
Ptychogaster, 74
Puccinia, 65, 14, 15, 18, 20
Pucciniastrum, 63
Pyrenochaeta, 136
Pyrenopeziza, 41
Pyrenophora, 56
Pyronema, 38
Pythium, 31, 16, 17

Radulum, 80
Ramularia, 124
Reticularia, 27
Rhabdospora, 136
Rhinotrichum, 125
Rhizina, 38
Rhizoctonia, 125, 16
Rhizogene, 44
Rhizopogon, 110
Rhizopus, 33, 16
Rhopalomyces, 126
Rhynchosporium, 126
Rhyparobius, 38

Rhytisma, 42
Rosellinia, 51
Russula, 94, 23

Saccharomyces, 34
Saccoblastia, 74
Saccobolus, 38
Saprolegnia, 29, 21
Sarcodon, 81
Sarcoscypha, 37
Schizophyllum, 95, 15
Schizoxylon, 42
Sclerodermatales, 112, 18
Sclerospora, 31
Sclerotinia, 41, 21
Sclerotium, 126
Scodellina, 38
Scoleconectria, 46
Scolecotrichum, 126, 119
Scopularia, 126
Scopulariopsis, 126
Sebacina, 74
Secotium, 110
Sepedonium, 126, 15
Septocylindrium, 127, 125
Septogloeum, 131, 129
Septomyxa, 127
Septoria, 137, 142, 14, 134
Sepultaria, 38
Seynesiella, 47
Solenia, 78
Sordaria, 48, 15
Sordariaceae, 47, 15
Sorodiscus, 29
Sorosporium, 61
Spathularia, 35
Speira, 127
Sphacelia, 127
Sphacelotheca, 61
Sphaerella, 53
Sphaeriales, 47, 21
Sphaerobolus, 112
Sphaeroderma, 46
Sphaerographium, 140
Sphaeronema, 140
Sphaeronemella, 140
Sphaeropezia, 42
Sphaeropsidales, 131
Sphaeropsis, 140
Sphaerotheca, 44
Sphaerulina, 53
Spicaria, 123
Spondylocadium, 127
Sporobolomyces, 60, 21
Sporocybe, 127
Sporodesmium, 127
Sporodinia, 33, 15

- Sporormia, 50
Sporotrichum, 127
Stachybotrys, 127
Stagonospora, 140
Steccherinum, 81
Steganosporium, 131
Stemonitis, 27
Stemphylium, 127
Stereum, 78
Stictis, 42
Stigmatea, 47
Stilbum, 127
Streptothrix, 127, 142
Stropharia, 106, 104, 18
Stysanus, 127
Syncephalastrum, 33
Syncephalis, 33
Synchytrium, 29

Tapesia, 42
Taphrina, 34
Tarichium, 33
Teichospora, 52
Tetracladium, 127
Thamnidium, 33
Thecaphora, 141
Thelebolus, 38
Thelephora, 79
Thelephoraceae, 75, 14, 22
Thielavia, 34
Thyridium, 57
Thyronectria, 46
Tilachlidium, 127
Tilletia, 61
Titaeospora, 131
Torula, 127
Tracya, 61
Trametes, 85, 81
Tranzschelia, 72
Tremella, 74
Tremellales, 74, 14, 21
Tremellodon, 74
Trichia, 27
Trichocladium, 127
Trichoderma, 128, 16
Trichoglossum, 35
Tricholoma, 95, 23
Trichopeziza, 42
Trichophyton, 141

Trichosporium, 128
Trichothecium, 128
Trimmatostroma, 128
Trinacrium, 128
Trogia, 96
Tubaria, 105
Tuber, 44
Tuberales, 44, 21
Tubercularia, 128
Tuberculina, 128, 16
Tubifera, 27
Tulasnella, 74
Tylostoma, 111
Tympanis, 42
Typhodium, 46
Typhula, 79

Ulocolla, 74
Uncinula, 45
Underwoodia, 35, 15
Uredinales, 62, 20, 21
Uredinopsis, 64
Urnula, 38
Urocystis, 61, 14, 18
Uromyces, 72, 14, 15
Urophlyctis, 29
Uropyxis, 73
Ustilaginales, 60, 21
Ustilago, 61

Valsa, 57
Valsaria, 58
Valsella, 58
Venturia, 56
Vermicularia, 129
Verpa, 35
Verticillium, 128, 15
Volutella, 128
Volvaria, 98, 18, 23

Wallrothiella, 51
Wojnowicia, 141

Xylaria, 60, 21

Zignoella, 51
Zygorhynchus, 33
ZygospERMella, 50